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Status of Atlantic Salmon (*Salmo salar* L.) Stocks of the Newfoundland Region, 1991

by

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Abstract

In 1991, the commercial Atlantic salmon fishery continued to be regulated by quota in all SFAs (allowance catch in SFA 1) of the Newfoundland Region. The overall quota in 1991 was 605 t, a reduction of 57 t from 1990 (the first year of management by quota), and of this amount, 353 t or 58% was caught. In SFAs 1 and 2 (Labrador), the fishery lasted the entire season (closed on October 15) without quotas having been taken. In insular Newfoundland, the commercial fishery closed prior to October 15 in all SFAs except SFA 4. In nearly all SFAs, commercial catches of both small and large salmon in 1991 were well below the average cumulative catch to the date of closure of the fishery for the period 1984-89. Severe ice conditions delayed the start of the commercial fishery until late July in northern Labrador and until early to mid-July in southern Labrador and along the northeast coast of insular Newfoundland. Recreational catches of both grilse and large salmon in Labrador in 1991 were the lowest on record. In insular Newfoundland, the recreational catch of grilse was below 1990 (-36%) and the 1974-83 (-47%) and 1984-89 (-50%) means. The low insular Newfoundland recreational catch could be attributed in part to the fact that many rivers in SFAs 9-11 were closed to angling for extended periods as a result of low water conditions. There are indications that the overall abundance of small and large salmon in insular Newfoundland and Labrador in 1991 was the lowest in recent years.

Résumé

En 1991, la pêche commerciale du saumon de l'Atlantique a continué d'être gérée selon un régime de contingents dans toutes les ZPS (limite de prises admissibles dans la ZPS 1). Le contingent global était de 605 t, ce qui représente une diminution de 57 t par rapport à 1990 (première année d'adoption du système de contingents), dont 353 t, ou 58 p. 100, ont été capturées. Dans les ZPS 1 et 2 (Labrador), la pêche s'est poursuivie toute la saison (jusqu'à la fermeture, le 15 octobre) sans que l'on n'épuise le contingent ou la limite de prises. Dans l'île de Terre-Neuve, la pêche commerciale a pris fin avant le 15 octobre dans toutes les ZPS, sauf la ZPS 4. Dans presque toutes les ZPS, les prises commerciales de gros et de petit saumon étaient bien inférieures à la moyenne des prises cumulées à la clôture de la pêche durant la période 1984-1989.
En raison de la forte concentration de glaces, la pêche commerciale n'a pu commencer avant la fin juillet dans le nord du Labrador et avant la première quinzaine de juillet dans le sud du Labrador ainsi que le long de la côte nord-est de l'île de Terre-Neuve. Au Labrador, les prises sportives de madeleineau et de gros saumon ont été les plus basses jusqu'ici. Dans l'île de Terre-Neuve, les prises sportives de madeleineau ont été inférieure à celles de 1990 (-36 p. 100) ainsi qu'aux moyennes de 1974-1983 (-47 p. 100) et de 1984-1989 (-50 p. 100). Les piètres résultats de la pêche sportive dans l'île de Terre-Neuve peuvent être dus en partie au fait que de nombreuses rivières des ZPS 9 à 11 ont été fermées à la pêche à la ligne pendant de longues périodes, en raison du bas niveau des eaux. Selon certaines indications, l'abondance générale du petit et du gros saumon dans l'île de Terre-Neuve a atteint en 1991 son niveau le plus bas par rapport à ceux des dernières années.

Introduction

This paper presents the status of Atlantic salmon stocks of the Newfoundland Region (Fig. 1) in 1991. Catch and effort data for the commercial and recreational fisheries and counts of salmon at fishways (insular Newfoundland) are examined in relation to historical data and the 1991 Management Plan.

A major change was introduced in the management of the commercial fishery in 1990. Quotas were introduced for the first time in Salmon Fishing Areas (SFAs) 2-11 while in SFA 1 an allowance catch was in effect. The fishing season started on June 5 and ended when the quota was caught. In 1991, quotas remained in effect but were reduced in SFAs 3 and 4. Also, SFA 1 was extended south to Fish Cove Point and SFA 2 was subdivided. Quotas (t) for each SFA in 1990 and 1991 were as follows:

SFA	1990	1991	
1*	80	80	
2	200	200	(2A=65; 2B=135)
3	155	120	
4	100	78	
5	25	25	
6	20	20	
7	15	15	
8	10	10	
9	7	7	
10	25	25	
11	25	25	
Total	662	605	

*Allovance catch

Otherwise, regulations were the same as in 1990. It was illegal to retain Atlantic salmon caught as by-catch and the mandatory carcass tagging program remained in effect. The number of licensed fishermen and the amount of licensed gear in the commercial fishery in 1991 are shown in Tables 1 and 2 respectively. The numbers of commercial fishermen and gear units in Labrador were similar to 1990; in insular Newfoundland numbers of fishermen and gear units decreased by 3%.

For the recreational fishery, regulations in 1991 were the same as in 1990 with the exception that the season bag limit was reduced from 15 to 10 fish. There was a mandatory release of large salmon in insular Newfoundland; however, this regulation did not apply to Labrador. The maximum number of fish that could be retained per day was two and the maximum number that could be hooked and released was four. Angling ceased for the day when one or the other limit

was attained. The mandatory carcass tagging program remained in effect. On a river specific basis, recreational catch in Conne River was limited to an allocation of 100 fish.

A number of rivers were closed to angling as a result of low water levels in 1991. The rivers involved and the duration of closure for each river are shown in Table 3.

Methods

In order to monitor the quota in each SFA, estimates of catch at the community level were compiled on a weekly basis by Fisheries and Habitat Management Branch (FHMB) personnel (Fishery Officers) of the Department of Fisheries and Oceans (DFO). Data compiled by Fisheries Statistics and Systems Branch (FSSB) personnel in the manner described by Ash and O'Connell (1987a,b) as used in previous status of stocks reports were also available. Therefore, in 1991, two sets of commercial catch data were available and these were as follows:

SFA	Total Catch (t)	
	FSSB	FHMB
1*	7	10
2	79	99
3	108	119
4	52	70
5	18	25
6	19	19
7	12	15
8	7	9
9	5	7
10	18	29
11	28	27

*Allowance catch

There were obvious inconsistencies between the two data sets. However, in keeping with previous reports, FSSB data were used in the present analysis. Also, the FSSB data set was the only one offering catch broken out in terms of small and large salmon.

Commercial and recreational fishery catch and effort data and fishway and counting fence data were added to that presented in O'Connell et al. (1991). Effort in the commercial fishery was presented as the number of gear units (91.5 m of gill net or salmon trap) licensed to prosecute the fishery. Recreational fishing effort was presented as rod days (defined as any day or part thereof on which an angler fishes).

Data collection, the calculation of mean weights of small and large salmon in the commercial fishery, the breaking down of unsized catch into the small

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and large categories, and the estimation of numbers of small and large salmon followed procedures outlined in Ash and O'Connell (1987a, 1987b).

Means and 95% confidence intervals for ratio variables were calculated according to Cochrane (1977).

An index of effort is available for the commercial fishery in the Nain region, Labrador (SFA 1) and is defined as person-weeks fished. Catch and effort data from four subareas (Dog Island, Black Island, Kiglapaits, and Cutthroat), which make up 92% of the Nain region total salmon catch, were analyzed using a multiplicative model (Gavaris 1980) to account for differences in catch rates among year, week, and subarea. The regression of ln catch rate for the period 1977 to 1991 was initially fitted using SAS Reg procedures. Diagnostics included leverage estimates and influence statistics using the DFFITS calculation (Freund and Littell 1986; Myers 1986). Cumulative probability plots of residuals were used in assessing normality of residuals. Standardized catch rates and standardized effort were obtained using the STANDAR (APL) version of the multiplicative analysis program.

Results and Discussion

COMMERCIAL FISHERY

Because of the quota system, the commercial fishery in 8 out of 11 SFAs closed prior to the usual closure date of October 15 (Table 4). In order to relate catch in 1991 to previous years in terms of an index of abundance, comparison is made with the average cumulative catch to the date of closure of the fishery in each area for the period 1984-89 (Table 4). Catches in 1991 are compared to 1990, the first year of quotas, and years prior to quotas (1974-89) for Labrador, insular Newfoundland, the entire Newfoundland Region, and for each SFA separately in Appendix 1a-n.

Labrador

Total catch (small and large salmon combined) was below allowance in SFA 1 and below quota in SFA 2 (Table 4); the fishery in both SFAs spanned the entire season (closed on October 15). Total catch was below the lower limit of the 95% confidence interval of the 1984-89 mean in both SFAs. A similar pattern was true for small and large salmon treated separately. The catches of small (43 t) and large (43 t) salmon in 1991 were the lowest on record (Appendix 1a).

Nain Fishing Region

Landings of Atlantic salmon from the Nain fishing region, SFA 1, are available since 1977 (Dempson and Shears 1991). Catches have ranged from a high of 60 t in 1980, to a low of 3 t in 1991. The 1991 catch was only 13% of the average catch of 23 t recorded during the past 10 years (1981-90). Over the past 15 years (1977-91), the Nain region catch has represented about 31% of the total SFA 1 catch of Atlantic salmon. Catches at Nain are highly associated with landings from the rest of Labrador ($r^2 = 0.63$; $P = 0.004$; $N = 15$).

The regression of ln catch rate for the 1977-91 period explained 48% of the variation in the data ($P = 0.0001$) (Table 5). Normal probability plots confirmed the general normality of the data (Fig. 2). Several observations in 1979 and 1985 appeared to have relatively high leverage but little influence in the final model as evidenced by the well balanced DFFITS values (Fig. 2). Year, week, and area classification variables were all significant (Table 5).

Highest catch rates occurred in week 30 (July 23-29) followed by weeks 31 and 32 (July 30-August 12). The Cutthroat subarea had the highest rates over the time series examined. Standardized effort and catch were strongly associated ($r^2 = 0.80$; $P = 0.0001$). Low catch in 1991 was associated with the lowest standardized effort recorded (Table 6). Severe ice conditions along the northern Labrador coast prevented fisherpersons from accessing many of the traditional offshore island fishing berths for much of the normal fishing season. Results of the multiplicative analysis suggest that abundance of salmon at Nain has been quite variable over time (Fig. 3) and with the exception of 1988 and 1989, generally in a declining trend. The lowest abundance recorded was in 1991 (Table 6). Years with the highest abundance were 1977, 1978, and in 1989. Low abundance at Nain this past season may provide supporting evidence for an overall low abundance of salmon throughout Labrador given the association between catches from Nain and the rest of Labrador.

Commercial Catches of Salmon in SFAs 1 and 2 Combined (Labrador) and Catches of 1SW Salmon with River Age > 3 at West Greenland

The salmon harvested in the Labrador commercial salmon fishery are believed to be primarily of Labrador origin (Pippy 1982). Data from Reddin and Porter (1988) indicated that the river age of MSW salmon in SFAs 1 and 2 is primarily > 3 years. The average river age for salmon stocks in the northwest Atlantic increases from south to north (Templeman 1967; Lear and Misra 1978). MSW salmon (large salmon) with river ages > 3 years are principally from stocks in Labrador and the Quebec North Shore (Reddin and Porter 1988).

The landings of MSW salmon in Labrador (SFAs 1 + 2) in year t were significantly correlated ($r^2 = 0.56$; $P = 0.0004$) to the landings at West Greenland of North American-origin 1SW (small salmon) salmon with river age > 3 years in year t-1 (Fig. 4). The time series of landings, 1973-91, for small and large salmon in SFAs 1+2 and North American-origin 1SW salmon with a river age of > 3 years at West Greenland were all tri-modal with declining trends (Fig. 5). The slope of the declining trend for the commercial catch of small salmon was not significant ($r^2 = 0.08$; $P = 0.24$) (Fig. 5a); however, there has been a substantial decline in landings since 1981. The relationship of large salmon in SFAs 1+2 on years was significant ($r^2 = 0.68$; $P = 0.0001$) (Fig. 5b) as was the relationship of North American-origin 1SW salmon with river age > 3 years over time ($r^2 = 0.40$; $P = 0.004$) (Fig. 5c).

The significant relationship between the catches of MSW salmon in Labrador and the catches at West Greenland of North American-origin 1SW salmon with river age > 3 years, indicates that as the abundance of a smolt class changes there is a corresponding change in the recruitment to the fisheries (Anon. 1991). The decline in the catches of MSW salmon in Labrador and North American-origin 1SW salmon of river age > 3 years at West Greenland indicates

that the decline is related to a decrease in population size rather than to changes in management regimes.

Insular Newfoundland

In insular Newfoundland the commercial fishery closed prior to October 15 in all SFAs except SFA 4 in 1991 (Table 4). Total catch was below the average cumulative catch to the date of closure of fishery for the period 1984-89 in all SFAs (Table 4) and in the cases of SFAs 4 - 8 was less than the lower limit of the 95% confidence interval. The catch of small salmon decreased from the mean in all SFAs except SFA 9; catches were less than the lower limit of the 95% confidence interval of the mean in SFAs 4, 5, 6, and 8. The catch of large salmon was similar to the mean in SFA 11 but below the mean in all other SFAs; catches were below the lower limit of the 95% confidence interval in all SFAs except 3, 9, 10, and 11. Catches of small (136 t) and large (130 t) salmon in insular Newfoundland declined from 1990 and were also the lowest on record (Appendix 1b).

RECREATIONAL FISHERY AND COUNTS AT COUNTING FACILITIES

Recreational catches of grilse and large salmon, effort, and catch per unit of effort (CPUE) for Labrador and insular Newfoundland are shown in Table 7 and Appendix 2a-b. Catch, effort, and CPUE in 1991 expressed as percentage change in relation to 1990 and the 1974-83 and 1984-89 means are presented in Table 8. Catch and effort data for the entire Newfoundland Region are shown in Appendix 2c.

Labrador

The catch of grilse in Labrador in 1991 (1151) declined by 49, 58, and 60% from 1990, the 1974-83 mean, and the 1984-89 mean respectively. The catch of large salmon (28) was also below 1990 and each mean (-89, -94, and -92% respectively). Catches of both grilse and large salmon were below the lower limit of the 95% confidence interval of each mean. Effort and CPUE decreased from 1990 and both means. It should be pointed out that recreational fishery data for Labrador are incomplete due to the fact that only partial figures were available for Sand Hill River and no data were available for St. Michael's River.

Insular Newfoundland

The recreational catch of grilse (11132) in insular Newfoundland in 1991 was below 1990 (-36%) and the 1974-83 (-47%) and 1984-89 (-50%) means. The catch was below the lower limit of the 95% confidence interval of each mean. Effort and CPUE also decreased from 1990 and the means. In 1991, 61 rivers in SFAs 5-11 were closed to angling due to low water levels (Table 3). This could have had an impact on the numbers of grilse angled in 1991.

Analysis by SFA

Recreational fishery catch and effort data for each SFA of the Newfoundland Region in 1991 are presented in Table 7 and Appendix 2d-n. Table 8 shows recreational catches, effort, and CPUE in 1991 for each SFA expressed as percentage change in relation to 1990, the 1974-83 mean, and the 1984-89 mean.

Labrador

SFA 1: The catch of grilse was below 1990 and the lower limit of the 95% interval of each mean. The same was true for large salmon. Effort and CPUE decreased from 1990 and both means.

SFA 2: Grilse and large salmon catches decreased from 1990 and the means and the catch for each component was below the lower limit of the 95% confidence interval of each mean. Effort and CPUE were also below 1990 and each mean.

Insular Newfoundland

SFA 3: The catch of grilse decreased from 1990 and the 1974-83 mean (within the 95% confidence interval) but increased over the 1984-89 mean (also within the 95% confidence interval). Effort increased over 1990 and both means while the reverse was true for CPUE.

SFA 4: Grilse catch decreased from 1990 and both means (below the lower limit of the 95% confidence interval). Catches for the Gander and Exploits rivers, the most important rivers in SFA 4, were well below average. Effort and CPUE also declined from 1991 and the means.

Counts of grilse and large salmon at fishways located in Exploits River (Bishop's Falls and Great Rattling Brook) and Salmon Brook (Gander River), and a counting fence installed just above head of tide in the main stem of Gander River, are presented in Tables 9 and 10 respectively. Table 11 shows counts in 1991 expressed as percentage change in relation to 1990 and the 1974-83 and 1984-89 means. The count of grilse at the Bishop's Falls fishway, located on the main stem of the Exploits River, was below 1990 and the 1984-89 mean but similar to the 1974-83 mean. The count at Great Rattling Brook was the same as 1990 but below the means. The count of grilse at the Gander River counting fence decreased from 1990. A partial count was obtained at Salmon Brook in 1990 because low water levels prevented fish from ascending the fishway for most of August and these conditions prevailed at the time counting operations ceased in early September. Nevertheless, the count in 1991, the lowest on record, was below the partial count of 1990 and well below the means. The count of large salmon (Table 10) at Bishop's Falls decreased from 1990 and both means; at Great Rattling Brook, there was an increase over 1990 but not the means. The count of large salmon at the Gander River counting fence increased over 1990 and was the highest recorded for the three years of the fence operation. The count of large salmon at Salmon Brook was below 1990 and both means.

SFA 5: The catch of grilse decreased from 1990 and both means (within the 95% confidence interval). Effort decreased from 1990 and both means; CPUE was similar to 1990 and the means. Three rivers were closed to angling for August 5-21 due to lov water levels (Table 3).

Fishways in SFA 5 are located in Middle Brook and Terra Nova River (upper and lower). The counts of grilse at all three fishways (Table 9) decreased from 1990 and both means (Table 11). The count of large salmon in Middle Brook

in 1990 (Table 10) was similar to 1990 but below both means (Table 11). The count of large salmon at the lower Terra Nova River fishway decreased from 1990 and the 1984-89 mean but increased over the 1974-83 mean.

SFA 6: The catch of grilse decreased from 1990 and both means (below the lower limit of the 95% confidence interval). Effort declined from 1990 and the means; CPUE was the same as in 1990, similar to the 1974-83 mean, but below the 1984-89 mean. Five rivers were closed to angling because of low water levels (Table 3)

SFA 7: Grilse catch was below 1990 and the lower limit of the 95% confidence interval of each mean. Effort decreased from 1989 and both means; CPUE improved over 1990 but remained below the means. Four rivers were closed from July 20 to August 7 (Table 3).

SFA 8: Grilse catch decreased from 1991 and was below the lower limit of the 95% confidence interval of each mean. Effort was similar to 1990 but below both means; CPUE was below 1990 and both means. One river was closed for the period July 20-August 7.

SFA 9: The catch of grilse was below 1990 and the lower limit of the 95% confidence interval of each mean. Effort and CPUE declined from 1990 and both means. Eight rivers were closed to angling for varying periods beginning on July 20 (Table 3).

A number of counting fences (Biscay Bay River, Northeast Brook, Trepassey, and Colinet River) and a fishway (Rocky River) have been operated in SFA 9 over the years. The count of grilse in Biscay Bay River (Table 9) decreased from 1990 and the 1984-89 mean (Table 11); the count was by far the lowest on record. The count of grilse in Northeast Brook, Trepassey increased over 1990 and was similar to the 1984-89 mean. Colinet River also recorded a decrease in grilse from 1990 (partial count in 1990) and the mean. At the Rocky River fishway, the count of grilse decreased from 1990 but remained slightly above the 1984-89 mean. Counts of large salmon (Table 10) in Biscay Bay and Colinet rivers were below 1990 and the mean. Numbers of large salmon increased over 1990 in Northeast Brook, Trepassey but remained below the mean. The count for Rocky River was similar to 1990 but above the mean.

SFA 10: The catch of grilse was below 1991 and the lower limit of the 95% confidence interval of each mean. Effort and CPUE decreased from 1990 and both means. Twenty rivers were closed to angling (Table 3): six were closed for varying periods beginning on July 20; the remainder were closed for varying periods beginning on August 3.

The count of grilse at the Northeast River, Placentia fishway (Table 9) decreased from 1990, was similar to the 1974-83 mean, but below the 1984-89 mean (Table 11). The number of large salmon (Table 10) was below 1990 and both means (Table 11).

SFA 11: The catch of grilse decreased from 1990 and both means (below the lower limit of the 95% confidence interval of each mean). Effort and CPUE were likewise below 1990 and both means. The lower catch and effort expenditure could be due in part to the limitation of catch in Conne River to 100 fish.

Twenty rivers were closed to angling (Table 3): one was closed from June 29 to September 2; two were closed from July 20 to mid-August while the remainder were closed for the period August 3-13.

The count of grilse at the Conne River counting fence (Table 9) was below 1990 and the mean (Table 11). The count of grilse at the Grand Bank fishway might be a partial count. There were reports of salmon in the lower river when counting operations ceased. The count observed however was below 1990 and the mean (Table 11). The number of large salmon (Table 10) in Conne River decreased from 1990 and the mean (Table 11); in Grand Bank Brook the count decreased from 1990 but surpassed the mean.

Comments and Conclusions

In 1990, 531 t (Appendix 1c) or 80% of the quota allocated in the commercial fishery in the entire Newfoundland Region (662 t) was reportedly caught. In 1991, the quota was reduced by 57 t to 605 t and of this amount, 353 t or 58% was caught. In Labrador in 1991 (Appendix 1a), 31% (86 t) of the 320 t allocated was caught compared to 82% (267 t) (Appendix 1b) of the quota (325 t) in insular Newfoundland. Extremely severe ice conditions hampered the fishery from the opening date until late July in northern Labrador while in southern Labrador and the northeast coast of the island, the period extended from opening date until early to mid-July.

In Labrador, in spite of a delayed commercial fishery, angling catches of both grilse and large salmon were by far the lowest recorded since 1974. Low angling catches coupled with the fact that commercial catches were the lowest on record with the fishery lasting the entire season, indicate that the abundance of both small and large salmon in Labrador in 1991 was the lowest in recent years. The analysis of catch rates presented above corroborates this conclusion as does the analysis of trends in the catches of MSW salmon in Labrador and 1SW salmon at West Greenland with a river age > 3 years.

In insular Newfoundland, the timing and duration of closures of rivers to angling and the numbers of rivers involved in SFAs 9-11 confound comparisons of angling catches with previous years. Also, in SFA 11, the restricted catch in Conne River is a complicating factor. There were no closures in SFAs 3 and 4 and only a few in August in SFA 5, hence angling data can be regarded as representative for these areas. Counts of grilse and large salmon at counting facilities in SFAs 9-11 however can be used as indicators of abundance for rivers along the south coast. In spite of the quota restrictions on commercial catches and the delayed start of the commercial fishery along the northeast coast, angling catches and counts at counting fences were low, indicating the overall abundance of both small and large salmon in insular Newfoundland in 1991 was the lowest in recent years. In terms of the commercial fishery alone, in nearly all SFAs, catches of both small and large salmon in 1991 were well below the average cumulative catches to the date of closure of the fishery for the period 1984-89.

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References

Anon. 1991. Report of the Working Group on North Atlantic salmon. ICES C.M. 1991/Assess:12. 157 p.

Ash, E.G.M., and M. F. O'Connell. 1987a. Atlantic salmon fishery in Newfoundland and Labrador, commercial and recreational, 1984. Can. Data Rep. Fish. Aquat. Sci. 658: v + 294 p.

Ash, E.G.M., and M. F. O'Connell. 1987b. Atlantic salmon fishery in Newfoundland and Labrador, commercial and recreational, 1985. Can. Data Rep. Fish. Aquat. Sci. 672: v + 284 p.

Cochran, W. G. 1977. Sampling techniques. John Wiley & Sons, Inc. 428 p.

Dempson, J. B., and M. Shears. 1991. Summary of catch statistics by sub-area and assessment unit for the northern Labrador Arctic charr and Atlantic salmon fisheries in 1990. CAFSAC Res. Doc. 91/30. 29 p.

Freund, R. J., and R. C. Littell. 1986. SAS systems for regression. 1986 Edition. SAS Institute Inc., Cary, North Carolina. 165 p.

Gavaris, S. 1980. Use of the multiplicative model to estimate catch rate and effort from commercial data. Can. J. Fish. Aquat. Sci. 37: 2272-2275.

Lear, W. H., and R. K. Misra. 1978. Clinal variation in scale characters of Atlantic salmon (Salmo salar) based on discriminant function analysis. J. Fish. Res. Board Can. 35:43-47.

Myers, R. H. 1986. Classical and modern regression with applications. Duxbury Press, Boston, Massachusetts. 359 p.

O'Connell, M. F., J. B. Dempson, E.G.M. Ash, and N. M. Cochrane. 1991. Status of Atlantic salmon (Salmo salar L.) stocks of the Newfoundland Region, 1990. CAFSAC Res. Doc. 91/16. 52 p.

Pippy, J. (Chairman). 1982. Report of the working group on the interception of mainland salmon in Newfoundland. Can. MS Rep. Fish. Aquat. Sci. 1654: x + 196 p.

Reddin, D. G., and T. R. Porter. 1988. Harvest estimates of MSW salmon with river age of three years and younger. ICES C.M. 1988/M:12. 14 p.

Templeman, W. 1967. Atlantic salmon from the Labrador Sea and off West Greenland, taken during A.T. Cameron cruise, July-August 1965. ICNAF Res. Bull. 4: 4-40.

Table 1. The number of licensed commercial Atlantic salmon fishermen for each SFA and the total for the insular Newfoundland and Labrador portions of the Newfoundland Region.

	No. of fishermen by SFA											
Year	1	2	Nfld. Region (Labrador)	3	4	5	6	7	8	9	10	11	Nfld. Region (Insular)
1974	108	323	431	626	1203	693	519	513	320	135	331	314	4654
1975	187	421	608	732	1399	765	596	635	314	103	388	402	5334
1976	179	464	643	660	1234	685	525	518	308	103	335	354	4722
1977	196	432	628	621	1154	622	469	446	264	86	303	334	4299
1978	290	403	693	629	1148	621	473	459	261	87	284	326	4288
1979	272	410	682	630	1148	617	457	445	266	85	296	321	4265
1980	271	352	623	617	1163	591	446	449	246	81	279	311	4183
1981	266	350	616	602	1126	550	412	429	246	75	269	305	4014
1982	262	339	601	569	1047	493	394	375	239	71	255	279	3722
1983	273	417	690	578	1033	479	383	356	239	68	250	263	3649
1984	248	378	626	512	892	395	317	277	200	58	201	213	3065
1985	234	351	585	439	695	283	259	229	186	45	162	182	2480
1986	212	356	568	438	696	281	257	231	183	45	164	185	2480
1987	213	362	575	433	693	275	255	231	175	43	163	182	2450
1988	182	361	543	432	682	259	241	217	177	43	156	172	2380
1989	196	353	549	425	679	257	238	216	175	42	156	172	2360
1990	150	361	511	427	669	248	234	212	170	38	150	172	2320
1991	157	355	512	412	647	236	223	205	166	39	147	173	2248

Table 2. The amount of licensed commercial salmon gear for each SFA and the total for the insular Newfoundland and Labrador portions of the Newfoundland Region.

	No. of gear units (91.5m) by SFA												
Year	1	2	Nfld. Region (Labrador)	3	4	5	6	7	8	9	10	11	Nfld.Region (Insular)
1974	288	1900	2188	2371	3151	2014	1589	1861	1608	407	1031	1008	15040
1975	556	2164	2720	2704	3962	2565	2074	2567	1875	432	1330	1504	19013
1976	549	2418	2967	2528	3547	2354	2074	2276	1823	347	1207	1377	17533
1977	612	2253	2865	2364	3327	2163	1876	1973	1582	292	1063	1288	15928
1978	1001	2167	3168	2406	3371	2172	1901	2066	1588	287	1069	1298	16158
1979	979	2244	3223	2418	3349	2169	1853	1971	1617	283	1051	1279	15990
1980	1018	1958	2976	2378	3485	2320	1834	2024	1536	268	1003	1268	16116
1981	981	1948	2929	2309	3390	1944	1709	1954	1524	252	979	1254	15315
1982	1046	1828	2874	2083	3002	1551	1536	1548	1395	222	837	1097	13271
1983	1080	1879	2959	2315	3729	1661	1499	1402	1089	235	934	1069	13933
1984	992	1471	2463	1892	3124	1341	1160	1012	774	201	718	786	11008
1985	936	1402	2338	1750	2768	1122	1036	914	744	178	644	722	9878
1986	848	1424	2272	1752	2782	1124	1028	922	732	180	656	740	9916
1987	852	1471	2323	1730	2764	1100	1018	920	700	172	652	728	9784
1988	728	1444	2172	1728	2728	1036	964	868	708	172	624	692	9520
1989	784	1412	2196	1700	2716	1028	952	864	700	168	624	688	9440
1990	600	1440	2040	1708	2674	988	932	848	680	152	600	688	9270
1991	628	1412	2040	1648	2588	944	892	820	664	156	588	692	8992

Table 3. Periods of closure due to low water levels and high water temperatures for scheduled rivers in the Newfoundland Region (Insular), 1991.

River	Period closed
SFA 5	
Northwest Brook, Port Blandford	Aug 5 - Aug 21
Salmon Brook, Port Blandford	Aug 5 - Aug 21
Southwest Brook, Port Blandford	Aug 5 - Aug 21
SFA 6	
Salmon Cove River (Trinity Bay)	Aug 5 - Aug 7
Popes Harbour River	Aug 5 - Aug 7
Shoal Harbour River	Aug 5 - Aug 21
Deer Harbour River	Aug 5 - Sept 2
Bellevue Brook (Trout Brook)	July 20 - Aug 21
SFA 7	
Salmon Cove River, Conception Bay	July 20 - Aug 7
North River, Conception Bay	July 20 - Aug 7
South River, Conception Bay	July 20 - Aug 7
North Arm River, Holyrood	July 20 - Aug 7
SFA 8	
Renews River	July 20 - Aug 7
SFA 9	
Biscay Bay River	July 20 - Sept 2
Northwest Brook, Trepassey	July 20 - Sept 2
Peters River, SMB	July 20 - Sept 2
Salmonier River	July 20 - Aug 21
North Harbour River, SMB	July 20 - Aug 21
Little Salmonier River	July 20 - Aug 8
Big Barachois River	July 20 - Aug 8
Branch River	July 20 - Aug 8
SFA 10	
Southeast River, Placentia	July 20 - Aug 8
Northeast River, Placentia	July 20 - Aug 20
Come-By-Chance River	July 20 - Aug 13
North Harbour River	July 20 - Aug 8

Table 3. (Cont'd)

River	Period closed
SFA 10 (Cont'd)	
Watsons Brook	Aug 3 - Aug 13
Black River	Aug 3 - Aug 13
Pipers Hole River	Aug 3 - Aug 13
Nonsuch Brook	Aug 3 - Aug 13
Cape Roger River	July 20 - Aug 13
Bay De L'Eau River	July 20 - Aug 13
Northeast Branch (Red Harbour)	Aug 3 - Aug 13
Red Harbour River	Aug 3 - Aug 13
Northwest Brook	Aug 3 - Aug 20
Tides Brook	Aug 3 - Aug 20
Big Salmonier River	Aug 3 - Aug 20
Little St. Lawrence River	Aug 3 - Aug 13
Lawn River	Aug 3 - Aug 13
Taylors Bay River	Aug 3 - Aug 20
Salmonier River (Lamaline)	Aug 3 - Aug 20
Piercey's Brook	Aug 3 - Aug 13
SFA 11	
Grand Bank Brook	Aug 3 - Aug 20
Garnish River	July 20 - Aug 20
Long Harbour River	July 20 - Aug 13
Bay Du Nord River	Aug 3 - Aug 13
Simmons Brook	Aug 3 - Aug 13
Southwest Brook	Aug 3 - Aug 13
Old Bay Brook	Aug 3 - Aug 8
Taylors Bay Brook	Aug 3 - Aug 8
Conne River	June 29 - Sept 2
Long Reach Brook	Aug 3 - Aug 13
Salmon River, Bay D'Est Brook	Aug 3 - Aug 13
D'Espoir Brook	Aug 3 - Aug 13
Allen Cove Brook	Aug 3 - Aug 13
Bottom Brook	Aug 3 - Aug 13
Dolland Brook	Aug 3 - Aug 13
Grey River	Aug 3 - Aug 13
White Bear River	Aug 3 - Aug 13
Bay De Loup River	Aug 3 - Aug 13
Kings Harbour River	Aug 3 - Aug 13
Grandy's River	Aug 3 - Aug 13

Table 4. Commercial quotas and catches of Atlantic salmon for each SFA in 1991 and mean cumulative catch to the date of closure of the fishery, 1984–89. Catches are also expressed as percentage change in relation to the 1984–89 means. 95% confidence limits are in parentheses.

SFA	Quota (t)	Date closed	Catch (t) in 1991			$\bar{x}$ catch to closing date, 1984–89			% change from $\bar{x}$		
			small	large	total	small	large	total	small	large	total
Labrador											
1	80*	Oct. 15	2	5	7	17.9 (12.6–23.2)	47.4 (32.2–62.6)	65.2 (47.3–83.1)	–88	–89	–89
2	200	Oct. 15	41	38	79	88.7 (44.8–132.7)	167.4 (101.9–232.9)	256.1 (151.8–360.5)	–54	–77	–69
Insular Nfld.											
3	120	Sept. 23	52	56	108	100.5 (51.2–149.7)	93.4 (46.1–140.7)	193.9 (99.4–288.3)	–48	–40	–44
4	78	Oct. 15	26	25	52[1]	86.7 (63.5–110.0)	53.0 (33.1–72.8)	139.7 (96.9–182.6)	–70	–53	–63
5	25	Jul. 25	12	6	18	27.7 (20.7–34.7)	20.4 (13.4–27.4)	48.1 (36.8–59.4)	–57	–71	–63
6	20	Jul. 21	12	6	19[1]	19.9 (12.2–27.6)	13.5 (8.5–18.6)	33.4 (22.1–44.8)	–40	–56	–43
7	15	Jul. 27	6	6	12	6.6 (4.9–8.2)	11.7 (8.6–14.7)	18.3 (13.6–23.9)	–9	–49	–34
8	10	Jul. 26	3	4	7	11.0 (6.7–15.3)	11.2 (6.9–15.7)	22.2 (14.7–29.9)	–73	–64	–68
9	7	Jul. 13	5	1	5[1]	4.4 (3.2–5.7)	1.5 (1.0–2.0)	5.9 (4.9–7.0)	+14	–33	–15
10	25	Jul. 11	12	6	18	19.0 (10.7–27.4)	8.6 (5.3–11.9)	27.6 (16.2–39.1)	–37	–30	–35
11	25	Jun. 29	8	20	28	16.4 (7.2–25.5)	19.4 (9.8–29.0)	35.8 (18.9–52.7)	–51	+3	–22

*Allowance catch.
[1]Error due to rounding.

Table 5. Results of the analysis of variance of ln transformed catch rate from the Nain region commercial Atlantic salmon fishery, 1977-91.

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: CUE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	29	104.26410465	3.59531395	12.26	0.0001	0.477607	13.4263
ERROR	389	114.04120167	0.29316504		ROOT MSE		CUE MEAN
CORRECTED TOTAL	418	218.30530631			0.54144717		4.03273699

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR > F
YY	14	31.61185018	7.70	0.0001	14	33.71480779	8.21	0.0001
SN	3	31.87995465	36.25	0.0001	3	30.77317543	34.99	0.0001
WK	12	40.77229981	11.59	0.0001	12	40.77229981	11.59	0.0001

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	4.62627844	0.12811776	36.110	0.0001
YY78	1	0.0007326286	0.13240903	0.006	0.9956
YY79	1	-0.618041	0.13231171	-4.671	0.0001
YY80	1	-0.12808	0.13308915	-0.962	0.3365
YY81	1	-0.203541	0.13555846	-1.501	0.1340
YY82	1	-0.257842	0.13273615	-1.943	0.0528
YY83	1	-0.570102	0.13829297	-4.122	0.0001
YY84	1	-0.55302	0.15200884	-3.638	0.0003
YY85	1	-0.718379	0.15076917	-4.765	0.0001
YY86	1	-0.563175	0.14005068	-4.021	0.0001
YY87	1	-0.81166	0.14653873	-5.539	0.0001
YY88	1	-0.414592	0.14848336	-2.792	0.0055
YY89	1	-0.00859608	0.13853902	-0.062	0.9506
YY90	1	-0.735596	0.14598824	-5.039	0.0001
YY91	1	-0.838912	0.19823944	-4.232	0.0001
SN2	1	-0.253575	0.0775859	-3.268	0.0012
SN3	1	-0.086084	0.07567657	-1.138	0.2560
SN4	1	0.50744028	0.07254376	6.995	0.0001
WK27	1	-1.15557	0.22401114	-5.159	0.0001
WK28	1	-0.510534	0.14823010	-3.444	0.0006
WK29	1	-0.0540996	0.11698342	-0.462	0.6440
WK30	1	0.15034331	0.10884344	1.381	0.1680
WK32	1	0.01807407	0.10536220	0.172	0.8639
WK33	1	-0.302902	0.10529691	-2.877	0.0042
WK34	1	-0.344127	0.10835009	-3.176	0.0016
WK35	1	-0.689823	0.11301813	-6.104	0.0001
WK36	1	-0.713148	0.12733785	-5.600	0.0001
WK37	1	-0.703219	0.16252286	-4.327	0.0001
WK38	1	-0.676897	0.18324537	-3.694	0.0003
WK39	1	-0.54298	0.32957817	-1.648	0.1003

Table 6. Commercial landings of Atlantic salmon for four subareas within the Nain fishing region, 1977-91, along with standardized catch rates and effort.

Year	Catch (kg)	C/E	SE	Effort
1977	37641	117	15	321
1978	43757	117	15	373
1979	29689	63	8	469
1980	58470	103	13	566
1981	43330	96	12	453
1982	30454	91	11	336
1983	18038	66	9	272
1984	12527	67	10	186
1985	13614	57	8	238
1986	19122	67	9	286
1987	13828	52	7	266
1988	19352	77	11	250
1989	28302	116	15	243
1990	12172	56	8	217
1991	2487	50	10	50

Table 7. Atlantic salmon recreational catch, effort, and catch per unit effort (CPUE) data for 1991 for each SFA and the insular and Labrador portions of the Newfoundland Region. Catches in 1990, the 1974–83, and the 1984–89 means are included; 95% Confidence Intervals are in parentheses.

	Grilse (< 63 cm)				Large salmon (> 63 cm)				Effort (rod days)				CPUE			
Salmon Fishing Area	1991	1990	$\bar{x}$ 1974–83	$\bar{x}$ 1984–89[1]	1991	1990	$\bar{x}$ 1974–83	$\bar{x}$ 1984–89[1]	1991	1990	$\bar{x}$ 1974–83	$\bar{x}$ 1984–89[1]	1991	1990	$\bar{x}$ 1974–83	$\bar{x}$ 1984–89[1]
1	29	272	611.8 (172.8)	713.5 (208.2)	1	70	296.6 (94.8)	140.2 (39.9)	433	678	680.7 (179.2)	951.2 (286.2)	0.07	0.50	1.33 (0.31)	0.90 (0.14)
2	1122	1971	2160.1 (337.8)	2165.0 (767.4)	27	189	169.7 (51.4)	207.7 (117.8)	2176	3174	2216.1 (342.6)	2620.7 (588.1)	0.53	0.68	1.05 (0.30)	0.91 (0.18)
Nfld Reg. (Labrador)	1151	2243	2771.9 (383.8)	2878.5 (905.9)	28	259	466.3 (113.3)	347.8 (104.2)	2609	3852	2896.8 (441.4)	3571.8 (761.3)	0.45	0.65	1.12 (0.23)	0.90 (0.11)
3	1316	1718	1557.3 (465.0)	1115.4 (527.4)					3495	3159	2659.5 (564.1)	2136.8 (756.5)	0.38	0.54	0.59 (0.12)	0.52 (0.09)
4	4892	5662	8507.2 (1660.6)	9004.6 (3876.4)					21999	23533	25998.5 (2891.9)	28158.4 (7877.0)	0.22	0.24	0.34 (0.04)	0.32 (0.06)
5	2048	2414	2530.8 (690.0)	3164.6 (1410.4)					7002	7999	8459.1 (1401.5)	10528.0 (2841.9)	0.29	0.30	0.30 (0.06)	0.30 (0.10)
6	186	334	309.4 (92.8)	372.2 (109.8)					1620	3089	2620.0 (479.8)	2884.2 (573.2)	0.11	0.11	0.12 (0.03)	0.13 (0.05)
7	36	49	102.4 (29.9)	100.8 (28.5)					644	827	1579.5 (194.7)	1317.4 (481.6)	0.06	0.06	0.07 (0.02)	0.08 (0.03)
8	11	86	76.6 (17.9)	99.6 (30.0)					324	349	448.2 (88.7)	493.6 (196.9)	0.03	0.25	0.17 (0.06)	0.20 (0.05)
9	560	1866	1744.5 (288.8)	1800.0 (583.5)					6482	8240	8198.3 (1183.8)	8228.4 (1318.6)	0.09	0.23	0.22 (0.05)	0.22 (0.05)
10	230	835	1114.7 (256.9)	1271.6 (318.4)					2891	4778	8558.0 (1108.2)	5908.4 (1133.7)	0.08	0.17	0.13 (0.02)	0.22 (0.03)
11	1853	4446	4890.1 (928.7)	5276.2 (1845.1)					7647	12520	10245.8 (2259.7)	14136.8 (1975.2)	0.24	0.36	0.48 (0.07)	0.37 (0.09)
Nfld Reg. (Ins.)	11132	17409	20833.0 (3429.0)	22205.0 (7517.6)					52104	64494	68766.9 (7534.9)	73792.0 (14436.0)	0.21	0.27	0.31 (0.04)	0.30 (0.05)

[1]1987 not included in mean for SFAs 3–11.

Table 8. Recreational catch, effort and catch per unit effort in 1991 for each SFA, and the insular and Labrador portions of the Newfoundland Region, expressed as percentage change in relation to 1990, the 1974-83 mean and the 1984-89 mean.

	Grilse (< 63 cm)			Salmon (≥ 63 cm)			Effort (rod days)			CPUE		
Salmon Fishing Area	1990	$\bar{X}$ 1974-83	$\bar{X}$ 1984-89*	1990	$\bar{X}$ 1974-83	$\bar{X}$ 1984-89*	1990	$\bar{X}$ 1974-83	$\bar{X}$ 1984-89*	1990	$\bar{X}$ 1974-83	$\bar{X}$ 1984-89*
1	-89	-95	-96	-98	-100	-99	-36	-36	-54	-86	-95	-92
2	-43	-48	-48	-86	-84	-87	-31	-2	-17	-22	-50	-42
Nfld Reg. (Labrador)	-49	-58	-60	-89	-94	-92	-32	-10	-27	-31	-60	-50
3	-23	-15	+18				+11	+31	+64	-30	-36	-27
4	-14	-42	-46				-7	-15	-22	-8	-35	-31
5	-15	-19	-35				-12	-17	-33	-3	-3	-3
6	-44	-40	-50				-48	-38	-44	0	-8	-15
7	-27	-65	-64				-22	-59	-51	0	-14	-25
8	-87	-86	-89				-7	-28	-34	-88	-82	-85
9	-70	-68	-69				-21	-21	-21	-61	-59	-59
10	-72	-79	-82				-39	-66	-51	-53	-38	-64
11	-58	-62	-65				-39	-25	-46	-33	-50	-35
Nfld Reg. (Insular)	-36	-47	-50				-19	-24	-29	-22	-32	-30

*1987 not included in mean for SFAs 3-11.

Table 9. Counts of grilse from fishways and counting fences in insular Newfoundland 1955–91 by Salmon Fishing Area (SFA); also shown are means ($\bar{X}$), standard deviations (SD), and coefficients of variation (CV).

	Fishways									Counting fences				
	SFA 4			SFA 5			SFA 9	SFA 10	SFA 11	SFA 4	SFA 9			SFA 11
Year	1A	1B	2	3	4	5	6	7	8	9	10	11	12	13
1955						53								
1956				323[a]	558	32								
1957			642	28[a]	141	21								
1958			1072	344[a]	677	10								
1959	886[a]		591	294[a]	394	62								
1960	1013	94	291		490	86								
1961	839	319	41		318	74								
1962		1037			496	284								
1963	1202	491			551	372								
1964		1752			418	246								
1965	1228	587			484	334								
1966	829[a]	942			368	134								
1967	1372	822			606	367								
1968		1334			714	409		57[a]						
1969	979	892			660	463								
1970		1023			755	561								
1971	961	902	731		579	316		159						
1972	794	495a	540	838	609	331		236						
1973	205		971	1079[a]	455	340		399[a]						
1974	2538		857	770[a]		162		223						
1975	9218	5531		1119[a]		778		186[a]						
1976	3991	2935				335		294						
1977	6148	4300				371								
1978	3790	2704	755	1403	810	436		390						
1979	6715	3925	404[a]	1350[a]	569	455		454						
1980		4597	997	1712	843	420		433						
1981	8114[a]	4264	2459	2414	1115	619		334[a]					133	
1982	7605[a]	2796	1425	1281	963	625		86[a]			2330		272	
1983		2952[a]	978	1195	1210	853		233			2430	89	359	
1984	17219	6300a	1081	1379	1233	904		419			1377[a]	124	170	
1985	16652	5985	1663	904	1557	960		384			2516	158	296	7515
1986	9697	3072	1064	1036	1051	726		725	211		1302a	91	368	9687
1987	9014	2327	493a	914	974	570	80	325a	155a		1695	97	205[a]	7118
1988	8974	3433	1562	772	1737	795	313	543	149		889[a]	62	441	4469
1989	7192	1694	596	496	1138	668	168	706	175	7743	1657	71	307[a]	4321
1990	6629	1057	328[a]	745	1149	410[a]	401	551	208	7520	394	99	218	2086
1991	5245	1060	245	562	873	311[a]	211	353	46[a]	6445				
1974-83														
$\bar{X}$	5400.0	3881.5	1245.2	1601.0	918.3	505.4		337.8						
SD	2434.5	1001.2	637.1	494.9	230.3	211.3		101.4						
CV	45.08	25.79	51.16	30.91	25.08	41.81		30.02						
N	6	8	6	5	6	10		6						
1984-89														
$\bar{X}$	11458.0	3302.2	1193.2	916.8	1281.7	770.5	187.0	555.4	178.3		2213.7	103.5	326.8	7197.2
SD	4326.9	1643.5	430.9	291.9	301.3	146.3	117.7	157.8	31.1		451.2	33.2	101.6	2140.8
CV	37.76	49.77	36.11	31.84	23.51	18.99	62.94	28.41	17.44		20.38	32.08	31.09	29.74
N	6	5	5	6	6	6	3	5	3		3	6	5	4

1 Exploits River
(a) Bishop's Falls
(b) Gt. Rattling Brook
2 Gander River (Salmon Brook)
3 Middle Brook
4 L. Terra Nova River
5 U. Terra Nova River
6 Rocky River
7 Northeast River (Placentia)
8 Grand Bank Brook
9 Gander River
10 Biscay Bay River
11 Northeast Brook (Trepassey)
12 Colinet River
13 Conne River

[a]Partial counts: not included in means

Table 10. Counts of large salmon from fishways and counting fences in insular Newfoundland 1955–91 by Salmon Fishing Area (SFA); also shown are means ($\bar{X}$), standard deviations (SD), and coefficients of variation (CV).

	Fishways									Counting fences				
	SFA 4			SFA 5			SFA 9	SFA 10	SFA 11	SFA 4	SFA 9			SFA 11
Year	1A	1B	2	3	4	5	6	7	8	9	10	11	12	13
1955						24								
1956				56[a]	37	44								
1957			323	2[a]	41	1								
1958			491	229[a]	195	0								
1959	119[a]		290	14[a]	67	0								
1960	157	9	183		216	0								
1961	118	53	15		100	1								
1962		31			277	4								
1963	65	37			320	34								
1964		116			298	18								
1965	203	190			255	51								
1966	506[a]	470			220	2								
1967	710	382			359	43								
1968		687			376	28		11[a]						
1969	498	290			391	136								
1970		199			469	172								
1971	300	261	494		279	121		21						
1972	113	234[a]	54	10	348	200		34						
1973	89		135	9[a]	303	223		64[a]						
1974	411		9	77[a]		121		9						
1975	1439	505		9[a]		52		36[a]						
1976	460	117				37		56						
1977	581	271				262								
1978	303	81	52	16	20	89		32						
1979	277	124	6[a]	54[a]	170	30		37						
1980		426	15	91	39	17		34						
1981	1695[a]	514	33	39	90	28		62[a]						
1982	181a	122	18	20	19	8		36[a]					116	
1983		302[a]	12	75	57	76		22			88		43	
1984	529	111[a]	38	57	107	98		44			83	33	97	
1985	183	38	26	27	112	60		0			21[a]	41	42	
1986	355	174	12	15	140	58		39	4		101	30	31	397
1987	310	41	9a	19	56	38	1	16a	2a		106a	30	55	498
1988	147	10	24	14	206	45	6	11	2		61	19	16[a]	418
1989	89	14	24	19	142	51	9	15	7	473	104[a]	18	81	319
1990	122	15	7[a]	13	144	34[a]	17	25	15	508	71	9	50[a]	361
1991	99	40	2	14	114	26[a]	16	8	7[a]	670	35	13	18	87
1974–83														
$\bar{X}$	578.5	270.0	23.2	48.2	65.8	72.0		31.7						
SD	435.7	185.7	16.4	33.4	57.5	75.5		15.7						
CV	75.32	68.78	70.69	69.29	87.39	104.86		49.53						
N	6	8	6	5	6	10		6						
1984–89														
$\bar{X}$	268.8	55.4	24.8	25.2	127.2	58.3	5.3	21.8	4.3		81.7	28.5	61.2	408.0
SD	162.1	67.7	9.2	16.3	49.6	21.1	4.0	18.9	2.5		20.0	8.7	27.4	73.6
CV	60.31	122.20	37.10	64.68	38.99	36.19	75.47	86.70	58.14		24.48	30.53	44.77	18.04
N	6	5	5	6	6	6	3	5	3		3	6	5	4

1 Exploits River
(a) Bishop's Falls
(b) Gt. Rattling Brook
2 Gander River (Salmon Brook)
3 Middle Brook
4 L. Terra Nova River
5 U. Terra Nova River
6 Rocky River
7 Northeast River (Placentia)
8 Grand Bank Brook
9 Gander River
10 Biscay Bay River
11 Northeast Brook (Trepassey)
12 Colinet River
13 Conne River

[a] Partial counts: not included in means

Table 11. Counts of grilse and large salmon from fishways and counting fences in insular Newfoundland for 1991 expressed as percentage change in relation to 1990, the 1974–83 mean and the 1984–89 mean.

	Grilse			Large salmon		
	1990	$\bar{x}$ 1974–83	$\bar{x}$ 1984–89	1990	$\bar{x}$ 1974–83	$\bar{x}$ 1984–89
FISHWAYS						
SFA 4						
Bishops Falls (Exploits River)	-21	-3	-54	-19	-83	-63
Gt. Rattling Brook (Exploits River)	0	-73	-68	+167	-85	-28
Salmon Brook	-25	-80	-79	-71	-91	-92
SFA 5						
Middle Brook	-25	-65	-39	+8	-71	-44
Lower Terra Nova River	-24	-5	-32	-21	+73	-10
Upper Terra Nova River[a]	-24	-38	-60	-24	-64	-55
SFA 9						
Rocky River	-47		+13	-6		+202
SFA 10						
Northeast River (Placentia)	-36	+4	-36	-68	-75	-63
SFA 11						
Grand Bank Brook[a]	-78		-74	-53		+63
COUNTING FENCES						
SFA 4						
Gander River	-14			+32		
SFA 9						
Biscay Bay River	-76		-82	-51		-57
Northeast Brook (Trepassey)	+39		-4	+44		-54
Colinet River	-29		-33	-64		-71
SFA 11						
Conne River	-52		-71	-76		-79

[a]Partial count in 1991 (see text).

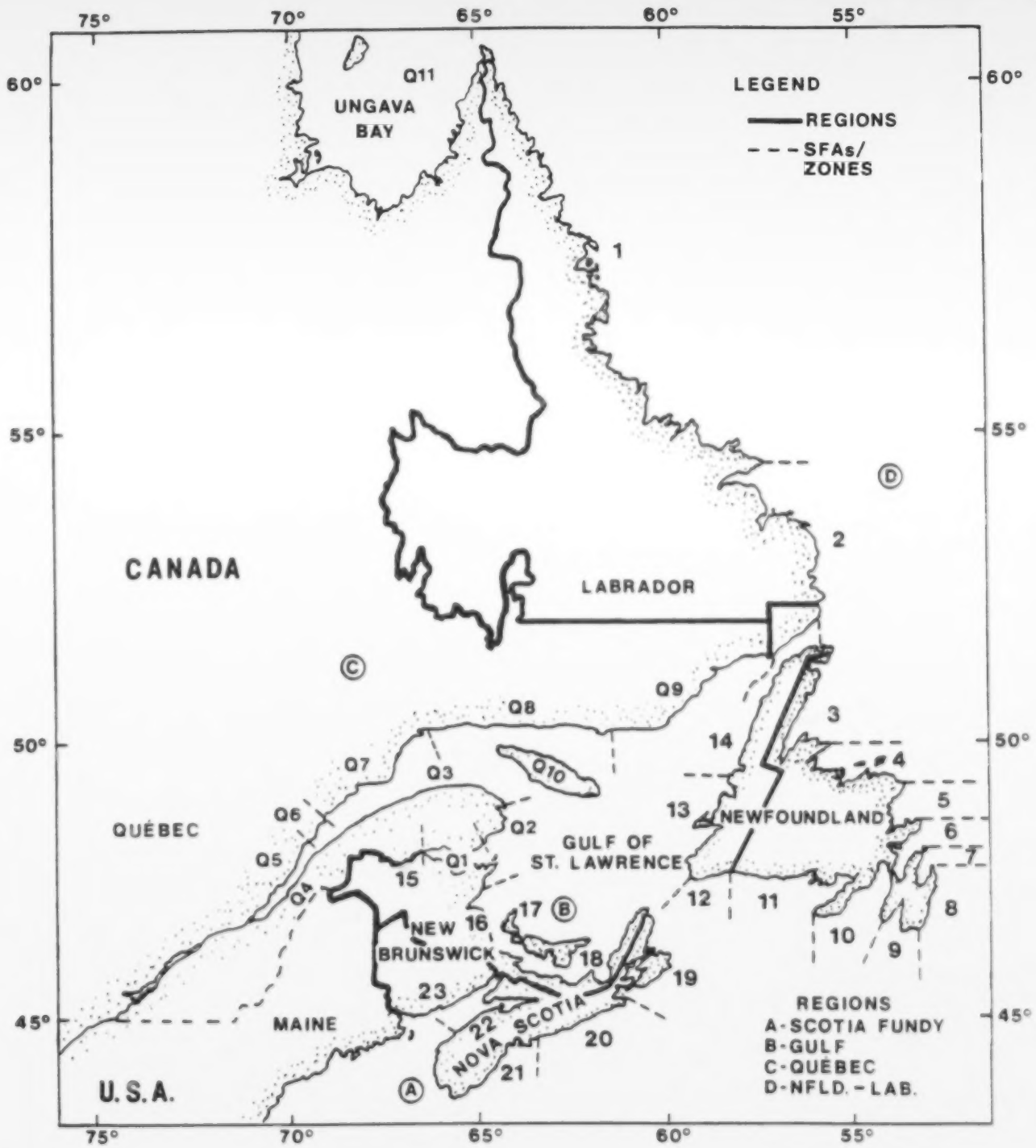
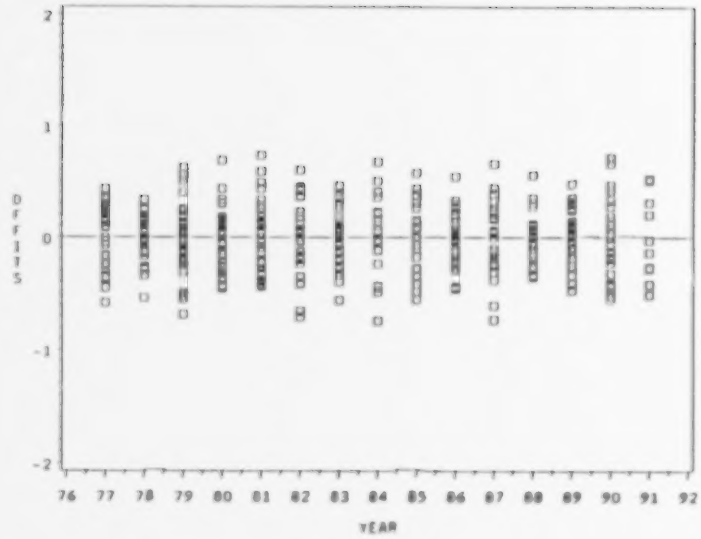
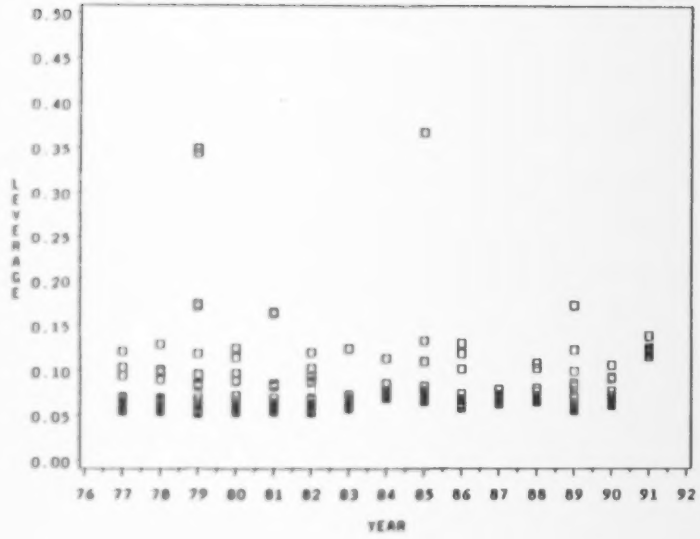
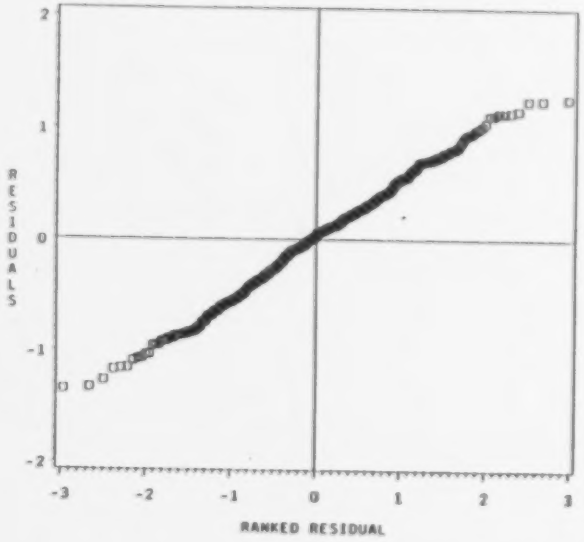


Fig. 1. Map of Atlantic Provinces of Canada showing Salmon Fishing Areas (SFAs) 1-23, Salmon Management Zones of Quebec (Qs) 1-11, and regional boundaries. The Newfoundland Region is comprised of SFAs 1-11.







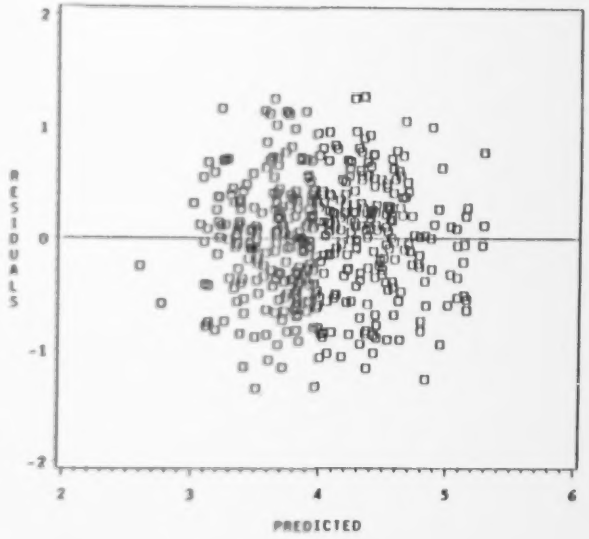


Fig. 2. Residual plots and influence diagnostics for the Nain region commercial Atlantic salmon catch rate series, 1977-91.

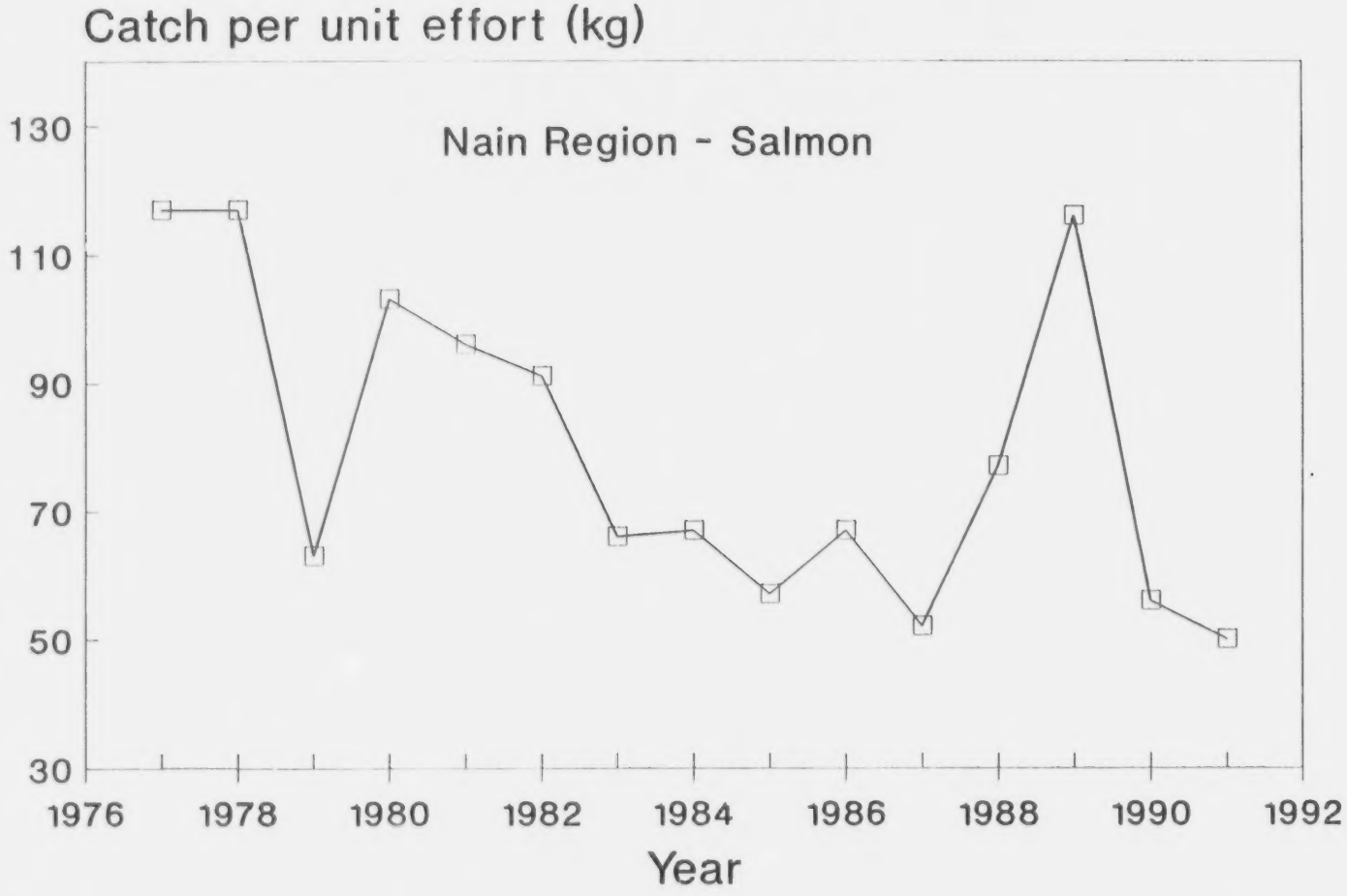


Fig. 3. Standardized catch rate series for the Nain region commercial Atlantic salmon fishery, 1977-91.

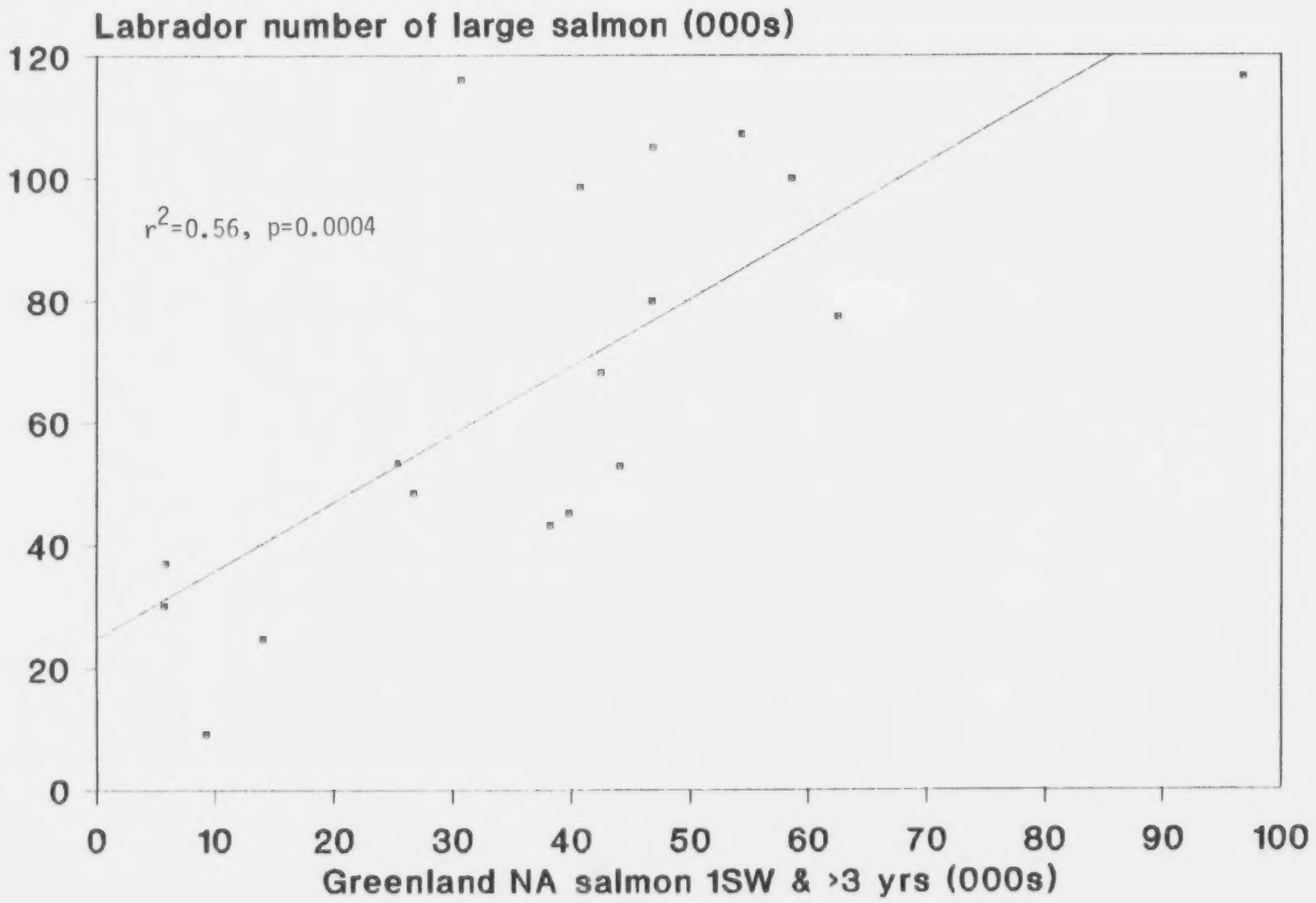
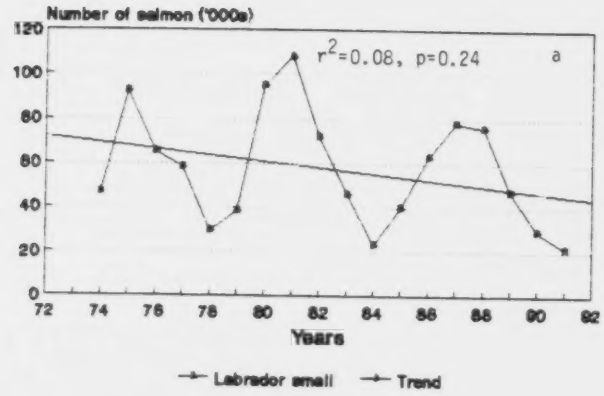
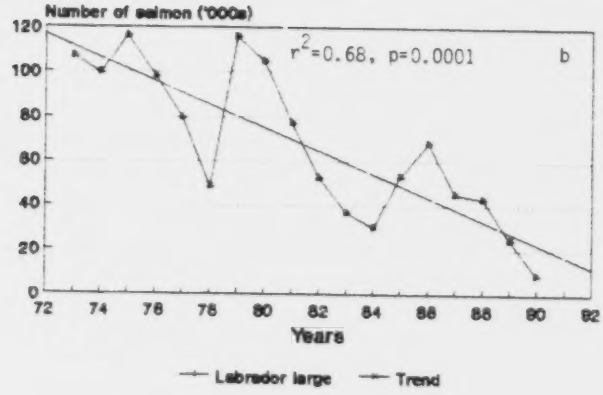


Fig. 4. Regression of the commercial catches of large salmon in SFA 1+2 on the catches, at West Greenland, of North American-origin 1SW salmon with river age >3 years, (1973-91) and of the same smolt-class.





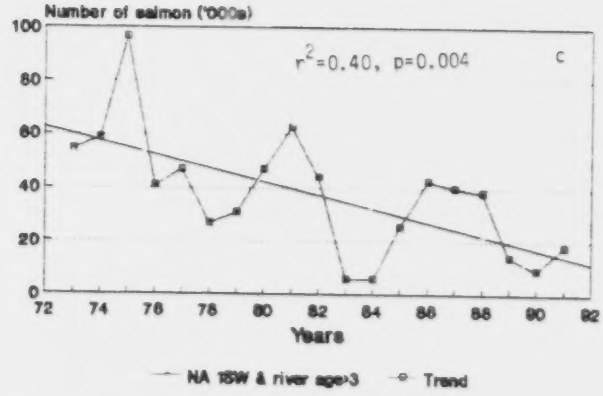


Fig. 5. Commercial catches and trend lines for: a) small salmon in SFAs 1+2; b) large salmon in SFAs 1+2; and c) North American-origin 1SW salmon with river age >3 years, in West Greenland. Large salmon are lagged (t-1), so that the catches of salmon of the same smolt-class are shown in the same year.

Appendix 1a. Summary of Atlantic salmon commercial catch data for Labrador (Newfoundland Region), 1974-1991. Weight in metric tonnes.

LABRADOR (NFLD REGION)

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	94	46993	524	106902	617	153895	15.24	30.54
1975	176	92497	429	99769	605	192266	29.09	48.11
1976	137	65057	523	116351	661	181408	20.73	35.86
1977	117	58335	481	98316	599	156651	19.53	37.24
1978	56	29630	375	79758	430	109388	13.02	27.09
1979	81	38520	213	48364	294	86884	27.55	44.33
1980	209	94986	579	115817	788	210803	26.52	45.06
1981	224	108022	538	104728	763	212750	29.36	50.77
1982	144	72070	362	77277	506	149347	28.46	48.26
1983	91	46149	239	52723	330	98872	27.58	46.68
1984	48	23169	170	36984	217	60153	22.12	38.52
1985	75	39899	136	30041	211	69940	35.55	57.05
1986	126	63100	271	53223	397	116323	31.74	54.25
1987	155	78065	327	68056	482	146121	32.16	53.42
1988	144	76022	212	45007	357	121029	40.34	62.81
1989	95	47433	194	43097	289	90530	32.87	52.39
1990	59	29435	121	24629	179	54064	32.96	54.44
1991[1]	43	21459	43	9039	86	30498	50.00	70.36
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	132.90	65225.90	426.30	90000.50	559.30	155226.40	*23.76	*42.02
S.D.:	55.99	26314.08	126.94	24535.64	167.88	45266.08	* 1.52	* 2.03
95% LCL:	92.85	46403.25	335.50	72449.98	439.21	122847.25	*20.79	*38.03
95% UCL:	172.95	84048.55	517.10	107551.02	679.39	187605.55	*26.74	*46.01
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	107.17	54614.67	218.33	46068.00	325.50	100682.67	*32.92	*54.24
S.D.:	41.67	21620.13	69.76	13296.64	106.59	32906.16	* 1.97	* 2.37
95% LCL:	63.43	31922.04	145.12	32111.77	213.62	66144.15	*29.06	*49.60
95% UCL:	150.91	77307.29	291.55	60024.23	437.38	135221.18	*36.79	*58.88

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1b. Summary of Atlantic salmon commercial catch data for insular Newfoundland (Newfoundland Region), 1974-1991. Weight in metric tonnes.

INSULAR NEWFOUNDLAND (NFLD REGION)

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	432	231372	586	123464	1017	354836	42.48	65.21
1975	466	245898	641	138352	1106	384250	42.13	63.99
1976	372	199752	548	124172	922	323924	40.35	61.67
1977	352	179273	651	138857	1004	318130	35.06	56.35
1978	171	86859	380	80323	550	167182	31.09	51.95
1979	334	168148	195	43441	526	211589	63.50	79.47
1980	498	240126	538	113730	1034	353856	48.16	67.86
1981	379	201068	556	116613	936	317681	40.49	63.29
1982	362	189032	270	62038	629	251070	57.55	75.29
1983	263	140138	269	60756	534	200894	49.25	69.76
1984	241	130131	240	54283	482	184414	50.00	70.56
1985	348	191216	242	57537	590	248753	58.98	76.87
1986	392	200267	282	60699	674	260966	58.16	76.74
1987	434	225025	357	77945	794	302970	54.66	74.27
1988	249	134562	192	43581	443	178143	56.21	75.54
1989	266	148297	190	46261	456	194558	58.33	76.22
1990	171	92554	180	39497	352	132051	48.58	70.09
1991[1]	136	74202	130	32604	267	106806	50.94	69.47
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	362.90	188166.60	463.40	100174.60	825.80	288341.20	*43.95	*65.26
S.D.:	95.31	48591.99	169.07	35193.27	236.03	74931.96	* 1.87	* 1.63
95% LCL:	294.72	153408.40	342.47	75000.60	656.97	234741.83	*40.29	*62.06
95% UCL:	431.08	222924.80	584.33	125348.60	994.63	341940.57	*47.60	*68.45
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	321.67	171583.00	250.50	56717.67	573.17	228300.67	*56.12	*75.16
S.D.:	81.42	39230.94	62.61	12287.91	140.14	50281.67	* 1.47	* 1.13
95% LCL:	236.21	130405.95	184.79	43820.20	426.07	175524.71	*53.24	*72.94
95% UCL:	407.12	212760.05	316.21	69615.13	720.26	281076.62	*59.00	*77.37

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1c. Summary of Atlantic salmon commercial catch data for the entire Newfoundland Region, 1974-1991. Weight in metric tonnes.

NFLD. & LABRADOR (NFLD REGION)

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	526	278365	1110	230366	1634	508731	32.19	54.72
1975	642	338395	1070	238121	1711	576516	37.52	58.70
1976	509	264809	1071	240523	1583	505332	32.15	52.40
1977	469	237608	1132	237173	1603	474781	29.26	50.05
1978	227	116489	755	160081	980	276570	23.16	42.12
1979	415	206668	408	91805	820	298473	50.61	69.24
1980	707	335112	1117	229547	1822	564659	38.80	59.35
1981	603	309090	1094	221341	1699	530431	35.49	58.27
1982	506	261102	632	139315	1135	400417	44.58	65.21
1983	354	186287	508	113479	864	299766	40.97	62.14
1984	289	153300	410	91267	699	244567	41.34	62.68
1985	423	231115	378	87578	801	318693	52.81	72.52
1986	518	263367	553	113922	1071	377289	48.37	69.81
1987	589	303090	684	146001	1276	449091	46.16	67.49
1988	393	210584	404	88588	800	299172	49.13	70.39
1989	361	195730	384	89358	745	285088	48.46	68.66
1990	230	121989	301	64126	531	186115	43.31	65.54
1991[1]	179	95661	173	41643	353	137304	50.71	69.67
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	495.80	253392.50	889.70	190175.10	1385.10	443567.60	*35.80	*57.13
S.D.:	140.74	69519.91	284.47	57956.56	388.98	115662.61	* 1.89	* 1.99
95% LCL:	395.13	203664.41	686.22	148718.36	1106.86	360833.30	*32.08	*53.22
95% UCL:	596.47	303120.59	1093.2	231631.84	1663.34	526301.90	*39.51	*61.03
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	428.83	226197.67	468.83	102785.67	898.67	328983.33	*47.72	*68.76
S.D.:	108.70	52543.90	123.69	23398.34	225.76	73221.33	* 2.09	* 1.77
95% LCL:	314.74	171047.26	339.01	78226.62	661.71	252129.76	*43.62	*65.30
95% UCL:	542.92	281348.07	598.66	127344.71	1135.62	405836.90	*51.82	*72.22

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1d. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 1, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 1

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	12	6211	35	7113	47	13324	25.53	46.62
1975	42	22105	76	17603	118	39708	35.59	55.67
1976	30	14124	139	30882	169	45006	17.75	31.38
1977	25	12363	98	20046	123	32409	20.33	38.15
1978	28	14530	124	26321	151	40851	18.54	35.57
1979	16	7419	72	16444	88	23863	18.18	31.09
1980	41	18587	112	22337	153	40924	26.80	45.42
1981	20	9616	123	24853	143	34469	13.99	27.90
1982	18	9174	66	14006	84	23180	21.43	39.58
1983	20	9907	61	13239	81	23146	24.69	42.80
1984	16	7683	32	6832	48	14515	33.33	52.93
1985	21	11054	51	11349	72	22403	29.17	49.34
1986	24	11794	65	12821	89	24615	26.97	47.91
1987	12	6248	62	13080	75	19328	16.00	32.33
1988	22	11682	42	9020	65	20702	33.85	56.43
1989	20	10041	56	12497	76	22538	26.32	44.55
1990	8	4486	22	4468	30	8954	26.67	50.10
1991[1]	2	916	5	1029	7	1945	28.57	47.10
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	25.20	12403.60	90.60	19284.40	115.70	31688.00	*21.78	*39.14
S.D.:	10.15	5027.29	33.59	7058.27	39.41	10344.22	* 2.12	* 3.06
95% LCL:	17.94	8807.54	66.58	14235.57	87.51	24288.70	*17.63	*33.15
95% UCL:	32.46	15999.66	114.62	24333.23	143.89	39087.30	*25.93	*45.14
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	19.17	9750.33	51.33	10933.17	70.83	20683.50	*27.06	*47.14
S.D.:	4.40	2290.51	12.52	2500.84	13.64	3513.99	* 2.58	* 3.21
95% LCL:	14.55	7346.20	38.20	8308.27	56.51	16995.19	*22.01	*40.85
95% UCL:	23.79	12154.47	64.47	13558.07	85.15	24371.81	*32.11	*53.43

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Apprndix 1 e. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 2, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 2

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	82	40782	489	99789	570	140571	14.39	29.01
1975	134	70392	353	82166	487	152558	27.52	46.14
1976	107	50933	384	85469	492	136402	21.75	37.34
1977	92	45972	383	78270	476	124242	19.33	37.00
1978	28	15100	251	53437	279	68537	10.04	22.03
1979	65	31101	141	31920	206	63021	31.55	49.35
1980	168	76399	467	93480	635	169879	26.46	44.97
1981	204	98406	415	79875	620	178281	32.90	55.20
1982	126	62896	296	63271	422	126167	29.86	49.85
1983	71	36242	178	39484	249	75726	28.51	47.86
1984	32	15486	138	30152	169	45638	18.93	33.93
1985	54	28845	85	18692	139	47537	38.85	60.68
1986	102	51306	206	40402	308	91708	33.12	55.94
1987	143	71817	265	54976	407	126793	35.14	56.64
1988	122	64340	170	35987	292	100327	41.78	64.13
1989	75	37392	138	30600	213	67992	35.21	54.99
1990	51	24949	99	20161	149	45110	34.23	55.31
1991[1]	41	20543	38	8010	79	28553	51.90	71.95
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	107.70	52822.30	335.70	70716.10	443.60	123538.40	*24.28	*42.76
S.D.:	52.03	24515.45	117.11	22822.27	153.07	41396.27	* 1.82	* 2.41
95% LCL:	70.48	35286.22	251.93	54391.17	334.10	93927.35	*20.70	*38.03
95% UCL:	144.92	70358.38	419.47	87041.03	553.10	153149.45	*27.85	*47.48
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	88.00	44864.33	167.00	35134.83	254.67	79999.17	*34.55	*56.08
S.D.:	42.04	21553.58	62.51	12148.26	99.90	31995.73	* 2.19	* 2.58
95% LCL:	43.87	22241.56	101.38	22383.94	149.81	46416.24	*30.26	*51.02
95% UCL:	132.13	67487.11	232.62	47885.73	359.52	113582.09	*38.85	*61.14

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1f. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 3, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 3

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	66	33129	83	18492	149	51621	44.30	64.18
1975	119	59495	121	26850	240	86345	49.58	68.90
1976	169	88837	174	40514	343	129351	49.27	68.68
1977	122	61215	240	51168	363	112383	33.61	54.47
1978	49	24384	82	17463	131	41847	37.40	58.27
1979	204	101970	65	15509	269	117479	75.84	86.80
1980	167	79798	165	34637	332	114435	50.30	69.73
1981	174	93658	175	36148	349	129806	49.86	72.15
1982	111	58977	79	17262	190	76239	58.42	77.36
1983	100	55136	94	20601	194	75737	51.55	72.80
1984	58	31539	88	19540	146	51079	39.73	61.75
1985	73	40484	50	11394	123	51878	59.35	78.04
1986	102	53685	90	18538	192	72223	53.13	74.33
1987	189	95777	180	38316	369	134093	51.22	71.43
1988	104	55251	88	19100	192	74351	54.17	74.31
1989	77	42687	74	18534	151	61221	50.99	69.73
1990	43	23016	92	19126	136	42142	31.62	54.62
1991[1]	52	27722	56	13696	108	41418	48.15	66.93
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	128.10	65659.90	127.80	27864.40	256.00	93524.30	*50.04	*70.21
S.D.:	49.85	25417.66	57.69	12167.53	87.65	31727.65	* 3.90	* 3.13
95% LCL:	92.44	47478.46	86.53	19160.87	193.30	70829.29	*42.39	*64.07
95% UCL:	163.76	83841.34	169.07	36567.93	318.70	116219.31	*57.69	*76.35
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	100.50	53237.17	95.00	20903.67	195.50	74140.83	*51.41	*71.81
S.D.:	46.82	22621.46	44.30	9054.81	89.23	30959.29	* 1.93	* 1.66
95% LCL:	51.36	29493.53	48.50	11399.68	101.84	41645.76	*47.63	*68.55
95% UCL:	149.64	76980.80	141.50	30407.65	289.16	106635.90	*55.19	*75.06

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1g. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 4, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 4

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	54	26821	52	11456	105	38277	51.43	70.07
1975	142	71225	103	22950	246	94175	57.72	75.63
1976	57	30249	60	14303	117	44552	48.72	67.90
1977	85	44691	96	20371	181	65062	46.96	68.69
1978	36	17821	68	14564	104	32385	34.62	55.03
1979	45	21524	33	7403	78	28927	57.69	74.41
1980	135	64024	110	24029	245	88053	55.10	72.71
1981	87	44106	128	26632	215	70738	40.47	62.35
1982	98	50764	69	16022	166	66786	59.04	76.01
1983	74	37560	56	12789	130	50349	56.92	74.60
1984	73	38857	50	10976	123	49833	59.35	77.97
1985	68	37957	43	10019	111	47976	61.26	79.12
1986	119	59902	81	17047	200	76949	59.50	77.85
1987	109	54935	71	15087	180	70022	60.56	78.45
1988	68	36016	35	8179	104	44195	65.38	81.49
1989	85	46988	48	10834	133	57822	63.91	81.26
1990	62	32648	31	6940	93	39588	66.67	82.47
1991[1]	26	13911	25	5972	52	19883	50.00	69.96
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	81.30	40878.50	77.50	17051.90	158.70	57930.40	*51.23	*70.56
S.D.:	35.98	17660.87	30.11	6179.33	61.23	22683.42	* 2.57	* 1.88
95% LCL:	55.56	28245.55	55.96	12631.78	114.90	41704.79	*46.19	*66.88
95% UCL:	107.04	53511.45	99.04	21472.02	202.50	74156.01	*56.26	*74.25
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	87.00	45775.83	54.67	12023.67	141.83	57799.50	*61.34	*79.20
S.D.:	22.05	9891.08	17.60	3344.58	39.13	13123.58	* 0.92	* 0.65
95% LCL:	63.86	35394.10	36.19	8513.18	100.76	44024.90	*59.54	*77.93
95% UCL:	110.14	56157.57	73.14	15534.16	182.90	71574.10	*63.14	*80.46

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1h. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 5, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 5

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	31	15344	35	7551	65	22895	47.69	67.02
1975	48	28024	112	24380	160	52404	30.00	53.48
1976	13	6284	44	10811	57	17095	22.81	36.76
1977	38	18031	90	19150	128	37181	29.69	48.50
1978	22	11578	59	12785	81	24363	27.16	47.52
1979	11	5342	18	3849	28	9191	39.29	58.12
1980	40	18246	47	10609	87	28855	45.98	63.23
1981	28	14252	65	14366	93	28618	30.11	49.80
1982	37	18607	23	6089	60	24696	61.67	75.34
1983	27	13723	31	7288	58	21011	46.55	65.31
1984	25	13390	33	7756	58	21146	43.10	63.32
1985	41	21323	31	7518	72	28841	56.94	73.93
1986	36	18044	25	6062	61	24106	59.02	74.85
1987	39	21588	21	5794	60	27382	65.00	78.84
1988	23	12774	16	4523	39	17297	58.97	73.85
1989	24	13417	13	3240	37	16657	64.86	80.55
1990	15	8018	10	2603	24	10621	62.50	75.49
1991[1]	12	6781	6	2066	18	8847	66.67	76.65
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	29.50	14943.10	52.40	11687.80	81.70	26630.90	*36.11	*56.11
S.D.:	11.84	6545.49	29.96	6292.41	38.35	11709.27	* 3.43	* 3.20
95% LCL:	21.03	10261.07	30.97	7186.79	54.27	18255.17	*29.38	*49.84
95% UCL:	37.97	19625.13	73.83	16188.81	109.13	35006.63	*42.83	*62.38
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	31.33	16756.00	23.17	5815.50	54.50	22571.50	*57.49	*74.24
S.D.:	8.21	4103.65	8.01	1733.73	13.69	5091.87	* 3.33	* 2.30
95% LCL:	22.71	12448.78	14.76	3995.77	40.13	17227.04	*50.97	*69.74
95% UCL:	39.95	21063.22	31.57	7635.23	68.87	27915.96	*64.02	*78.73

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1i. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 6, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 6

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	74	39102	94	19185	168	58287	44.05	67.09
1975	40	21994	67	14171	106	36165	37.74	60.82
1976	21	10204	33	6648	54	16852	38.89	60.55
1977	34	15236	57	11849	90	27085	37.78	56.25
1978	21	10193	55	10689	76	20882	27.63	48.81
1979	20	9661	9	1757	29	11418	68.97	84.61
1980	29	14568	35	6919	63	21487	46.03	67.80
1981	23	12843	50	10356	73	23199	31.51	55.36
1982	23	12006	20	4278	43	16284	53.49	73.73
1983	11	6432	18	4086	30	10518	36.67	61.15
1984	19	10436	15	3532	34	13968	55.88	74.71
1985	46	26911	19	4462	65	31373	70.77	85.78
1986	31	16227	23	4715	54	20942	57.41	77.49
1987	27	15197	20	4365	48	19562	56.25	77.69
1988	14	8464	10	2180	25	10644	56.00	79.52
1989	18	10304	10	2749	27	13053	66.67	78.94
1990	10	5219	7	1780	17	6999	58.82	74.57
1991[1]	12	6926	6	1726	19	8652	63.16	80.05
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	29.60	15223.90	43.80	8993.80	73.20	24217.70	*40.44	*62.86
S.D.:	17.55	9376.12	25.89	5292.02	41.58	14142.17	* 2.50	* 2.46
95% LCL:	17.05	8517.09	25.28	5208.38	43.46	14101.70	*35.53	*58.03
95% UCL:	42.15	21930.71	62.32	12779.22	102.94	34333.70	*45.34	*67.69
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	25.83	14589.83	16.17	3667.17	42.17	18257.00	*61.26	*79.91
S.D.:	11.69	6752.91	5.42	1028.56	16.04	7541.57	* 3.23	* 2.09
95% LCL:	13.57	7501.94	10.48	2587.59	25.33	10341.32	*54.94	*75.81
95% UCL:	38.10	21677.73	21.85	4746.75	59.01	26172.68	*67.59	*84.01

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1j. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 7, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 7

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	43	21478	83	17277	126	38755	34.13	55.42
1975	19	9819	56	12153	75	21972	25.33	44.69
1976	15	7983	33	7042	48	15025	31.25	53.13
1977	23	11318	56	11875	78	23193	29.49	48.80
1978	10	4771	40	8572	50	13343	20.00	35.76
1979	5	2347	7	1418	11	3765	45.45	62.34
1980	22	10012	52	10747	74	20759	29.73	48.23
1981	18	9363	55	11168	73	20531	24.66	45.60
1982	6	3091	11	2425	17	5516	35.29	56.04
1983	7	3741	16	3478	23	7219	30.43	51.82
1984	6	3962	12	2736	19	6698	31.58	59.15
1985	8	4685	16	3582	25	8267	32.00	56.67
1986	7	3417	12	2634	19	6051	36.84	56.47
1987	10	4811	16	3510	26	8321	38.46	57.82
1988	5	2870	11	2467	16	5337	31.25	53.78
1989	5	2979	9	2219	14	5198	35.71	57.31
1990	5	2860	7	1398	12	4258	41.67	67.17
1991[1]	6	3187	6	1534	12	4721	50.00	67.51
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	16.80	8392.30	40.90	8615.50	57.50	17007.80	*29.22	*49.34
S.D.:	11.35	5626.94	24.21	5035.61	35.07	10450.63	* 1.69	* 2.08
95% LCL:	8.68	4367.31	23.58	5013.49	32.41	9532.39	*25.91	*45.27
95% UCL:	24.92	12417.29	58.22	12217.51	82.59	24483.21	*32.52	*53.42
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	6.83	3787.33	12.67	2858.00	19.83	6645.33	*34.45	*56.99
S.D.:	1.94	838.60	2.80	561.35	4.79	1385.65	* 1.38	* 0.66
95% LCL:	4.80	2907.13	9.72	2268.81	14.80	5190.94	*31.74	*55.71
95% UCL:	8.87	4667.53	15.61	3447.19	24.86	8099.72	*37.17	*58.28

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1k. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 8, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 8

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	50	27847	84	18210	134	46057	37.31	60.46
1975	28	14513	83	17669	111	32182	25.23	45.10
1976	17	9128	50	10628	67	19756	25.37	46.20
1977	15	7915	55	11754	70	19669	21.43	40.24
1978	3	1487	28	5901	31	7388	9.68	20.13
1979	5	2719	9	1881	14	4600	35.71	59.11
1980	22	10362	67	13953	89	24315	24.72	42.62
1981	13	6940	38	8644	51	15584	25.49	44.53
1982	9	3457	9	2238	17	5695	52.94	60.70
1983	9	4836	15	3441	24	8277	37.50	58.43
1984	15	8156	16	3898	31	12054	48.39	67.66
1985	15	6604	16	4589	31	11193	48.39	59.00
1986	16	8029	8	2010	24	10039	66.67	79.98
1987	10	5498	13	2766	23	8264	43.48	66.53
1988	7	3853	12	2712	19	6565	36.84	58.69
1989	7	3720	5	1314	12	5034	58.33	73.90
1990	4	2525	5	1100	9	3625	44.44	69.66
1991[1]	3	1904	4	959	7	2863	42.86	66.50
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	17.10	8920.40	43.80	9431.90	60.80	18352.30	*28.13	*48.61
S.D.:	13.84	7722.92	28.65	6054.52	41.15	13236.28	* 2.77	* 3.74
95% LCL:	7.20	3396.14	23.30	5101.06	31.36	8884.29	*22.70	*41.28
95% UCL:	27.00	14444.66	64.30	13762.74	90.24	27820.31	*33.55	*55.93
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	11.67	5976.67	11.67	2881.50	23.33	8858.17	*50.00	*67.47
S.D.:	4.18	1958.91	4.41	1200.62	7.28	2731.12	* 3.99	* 3.52
95% LCL:	7.28	3920.58	7.04	1621.32	15.69	5991.57	*42.18	*60.57
95% UCL:	16.05	8032.76	16.30	4141.68	30.98	11724.77	*57.82	*74.37

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 11. Summary of Atlantic salmon commercial catch data in Salmon Fishing Area 9, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 9

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	8	4396	2	420	10	4816	80.00	91.28
1975	6	3395	3	628	9	4023	66.67	84.39
1976	5	2833	1	310	7	3143	71.43	90.14
1977	4	2454	1	266	6	2720	66.67	90.22
1978	7	3702	5	1013	11	4715	63.64	78.52
1979	21	11445	6	1239	26	12684	80.77	90.23
1980	12	6153	3	522	14	6675	85.71	92.18
1981	13	7024	4	834	17	7858	76.47	89.39
1982	13	6706	2	395	14	7101	92.86	94.44
1983	7	3891	2	447	9	4338	77.78	89.70
1984	10	5203	2	336	12	5539	83.33	93.93
1985	9	4849	2	483	11	5332	81.82	90.94
1986	6	3131	2	418	8	3549	75.00	88.22
1987	5	2907	1	300	7	3207	71.43	90.65
1988	5	2787	3	663	8	3450	62.50	80.78
1989	5	3027	2	589	8	3616	62.50	83.71
1990	5	3140	2	371	7	3511	71.43	89.43
1991[1]	5	3080	1	176	5	3256	100.00	94.59
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	9.60	5199.90	2.90	607.40	12.30	5807.30	*78.05	*89.54
S.D.:	5.17	2718.42	1.66	322.05	5.89	2945.23	* 2.75	* 1.26
95% LCL:	5.90	3255.39	1.71	377.03	8.09	3700.56	*72.66	*87.07
95% UCL:	13.30	7144.41	4.09	837.77	16.51	7914.04	*83.44	*92.01
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	6.67	3650.67	2.00	464.83	9.00	4115.50	*74.07	*88.71
S.D.:	2.25	1077.38	0.63	142.11	2.00	1033.92	* 3.91	* 2.03
95% LCL:	4.30	2519.84	1.34	315.67	6.90	3030.30	*66.41	*84.72
95% UCL:	9.03	4781.49	2.66	613.99	11.10	5200.70	*81.74	*92.69

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1m. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 10, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 10

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	62	36686	36	7880	99	44566	62.63	82.32
1975	15	9604	16	3304	31	12908	48.39	74.40
1976	19	11266	20	4269	39	15535	48.72	72.52
1977	19	11366	17	3677	36	15043	52.78	75.56
1978	13	7416	22	4782	35	12198	37.14	60.80
1979	5	3129	14	3106	20	6235	25.00	50.18
1980	35	19347	28	5916	63	25263	55.56	76.58
1981	8	4698	11	2226	19	6924	42.11	67.85
1982	30	16820	16	3526	46	20346	65.22	82.67
1983	10	5084	12	2767	22	7851	45.45	64.76
1984	18	9632	8	1724	26	11356	69.23	84.82
1985	40	22460	11	2261	51	24721	78.43	90.85
1986	34	15627	15	3471	49	19098	69.39	81.83
1987	19	10075	9	1986	28	12061	67.86	83.53
1988	12	6854	6	1350	18	8204	66.67	83.54
1989	28	15736	11	2774	40	18510	70.00	85.01
1990	18	10283	6	1825	24	12108	75.00	84.93
1991[1]	12	6533	6	1859	18	8392	66.67	77.85
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	21.60	12541.60	19.20	4145.30	41.00	16686.90	*52.68	*75.16
S.D.:	17.02	9951.08	7.74	1682.53	24.32	11475.93	* 3.68	* 2.77
95% LCL:	9.42	5423.52	13.66	2941.77	23.60	8478.09	*45.48	*69.73
95% UCL:	33.78	19659.68	24.74	5348.83	58.40	24895.71	*59.89	*80.59
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	25.17	13397.33	10.00	2261.00	35.33	15658.33	*71.23	*85.56
S.D.:	10.67	5667.51	3.10	764.35	13.38	6150.01	* 2.09	* 1.78
95% LCL:	13.97	7448.68	6.75	1458.73	21.29	9203.24	*67.13	*82.08
95% UCL:	36.36	19345.99	13.25	3063.27	49.38	22113.42	*75.33	*89.05

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 1n. Summary of Atlantic salmon commercial catch data for Salmon Fishing Area 11, 1974-1991. Weight in metric tonnes.

SALMON FISHING AREA 11

YEAR	SMALL WEIGHT	SMALL NUMBER	LARGE WEIGHT	LARGE NUMBER	TOTAL WEIGHT	TOTAL NUMBER	PERCENT SMALL(W)	PERCENT SMALL(N)
1974	44	26569	117	22993	161	49562	27.33	53.61
1975	49	27829	80	16247	128	44076	38.28	63.14
1976	56	32968	133	29647	190	62615	29.47	52.65
1977	12	7047	39	8747	52	15794	23.08	44.62
1978	10	5507	21	4554	31	10061	32.26	54.74
1979	18	10011	34	7279	51	17290	35.29	57.90
1980	36	17616	31	6398	67	24014	53.73	73.36
1981	15	8184	30	6239	46	14423	32.61	56.74
1982	35	18604	41	9803	76	28407	46.05	65.49
1983	18	9735	25	5859	44	15594	40.91	62.43
1984	17	8956	16	3785	33	12741	51.52	70.29
1985	48	25943	54	13229	101	39172	47.52	66.23
1986	41	22205	26	5804	67	28009	61.19	79.28
1987	26	14237	26	5821	53	20058	49.06	70.98
1988	11	5693	11	2407	22	8100	50.00	70.28
1989	17	9439	18	4008	34	13447	50.00	70.19
1990	9	4845	20	4354	30	9199	30.00	52.67
1991[1]	8	4158	20	4616	28	8774	28.57	47.39
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1974-1983):								
MEAN:	29.30	16407.00	55.10	11776.60	84.60	28183.60	*34.63	*58.21
S.D.:	16.75	9853.06	40.42	8467.08	55.19	17829.48	* 3.46	* 3.58
95% LCL:	17.32	9359.03	26.19	5720.03	45.12	15430.04	*27.85	*51.20
95% UCL:	41.28	23454.97	84.01	17833.17	124.08	40937.16	*41.41	*65.22
MEANS,STANDARD DEVIATIONS AND CONFIDENCE INTERVALS (1984-1989):								
MEAN:	26.67	14412.17	25.17	5842.33	51.67	20254.50	*51.61	*71.16
S.D.:	14.79	8052.89	15.29	3846.13	29.02	11563.47	* 3.85	* 3.65
95% LCL:	11.15	5959.80	9.12	1805.41	21.21	8117.41	*44.07	*63.99
95% UCL:	42.19	22864.53	41.21	9879.26	82.13	32391.59	*59.15	*78.32

NOTE: FLAGGED VALUES INDICATE CALCULATIONS OBTAINED USING RATIO ESTIMATORS

[1]preliminary data.

Appendix 2a. Summary of Atlantic salmon recreational catch and effort data for Labrador (Newfoundland Region), 1953-1991.

NEWFOUNDLAND REGION (LABRADOR)

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	.	.	.	.	.	.
1954	100	350	150	500	5.00	.
1955	198	125	8	133	0.67	98
1956	101	20	0	20	0.20	100
1957	342	1022	49	1071	3.13	29
1958	366	849	20	869	2.37	98
1959	500	823	37	860	1.72	96
1960	399	558	39	597	1.50	95
1961	634	713	126	839	1.32	82
1962	611	764	58	822	1.35	92
1963	694	1372	58	1430	2.06	93
1964	1583	1916	121	2037	1.29	92
1965	1826	1544	236	1780	0.97	89
1966	2280	1978	362	2340	1.03	81
1967	1436	1085	195	1280	0.89	91
1968	1821	2131	309	2440	1.34	78
1969	1619	1612	120	1732	1.07	95
1970	2750	2447	241	2688	0.98	87
1971	2639	3007	239	3246	1.23	91
1972	2808	2524	344	2868	1.02	90
1973	5228	6061	577	6638	1.27	81
1974	2779	1761	512	2273	0.82	92
1975	2029	2903	173	3076	1.52	91
1976	3259	3228	520	3748	1.15	85
1977	3316	2932	693	3625	1.09	82
1978	3835	2118	584	2702	0.70	83
1979	3184	3217	490	3707	1.16	81
1980	2472	2862	552	3414	1.38	85
1981	1845	3493	300	3793	2.06	91
1982	3121	2833	541	3374	1.08	87
1983	3128	2372	298	2670	0.85	90
1984	3131	1948	325	2273	0.73	88
1985	2702	2009	194	2203	0.82	91
1986	3051	2393	283	2676	0.88	88
1987	3761	3479	418	3897	1.04	85
1988	4504	3931	459	4390	0.97	88
1989	4282	3511	408	3919	0.92	91
1990	3852	2243	259	2502	0.65	93
1991	2609	1151	28	1179	0.45	99
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	2896.8	2771.9	466.3	3238.2	1.12	87
$\bar{X}\pm$95%CL	±441.4	±383.8	±113.3	±381.1	±0.23	±3.16
N	10	10	10	10	10	10
84-89	3571.8	2878.5	347.8	3226.3	0.90	89
$\bar{X}\pm$95%CL	±761.3	±905.9	±104.2	±1000.3	±0.11	±2.21
N	6	6	6	6	6	6

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2b. Summary of Atlantic salmon recreational catch and effort data for insular Newfoundland (Newfoundland Region), 1953-1991.

NEWFOUNDLAND REGION (INSULAR)

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	27955	7519	707	8226	0.29	.
1954	16974	3071	559	3630	0.21	93
1955	11183	4704	394	5098	0.46	89
1956	33532	7660	609	8269	0.25	89
1957	17514	7927	690	8617	0.49	92
1958	16593	9178	876	10054	0.61	90
1959	17570	7972	713	8685	0.49	93
1960	17530	6732	634	7366	0.42	93
1961	13730	4476	302	4778	0.35	96
1962	21641	9201	711	9912	0.46	86
1963	26824	10122	551	10673	0.40	94
1964	34886	15435	846	16281	0.47	92
1965	34083	11895	548	12443	0.37	97
1966	34073	13361	384	13745	0.40	97
1967	38067	9391	178	9569	0.25	99
1968	40004	16244	372	16616	0.42	96
1969	40347	16181	289	16470	0.41	98
1970	38933	15485	180	15665	0.40	99
1971	38417	12933	218	13151	0.34	99
1972	33487	12656	142	12798	0.38	99
1973	46180	19286	164	19450	0.42	99
1974	67894	15518	171	15689	0.23	99
1975	60191	16059	245	16304	0.27	98
1976	64853	16402	320	16722	0.26	98
1977	69057	21375	1186	22561	0.33	93
1978	63599	19723	616	20339	0.32	97
1979	50199	17849	379	18228	0.36	98
1980	66625	23373	720	24093	0.36	96
1981	77884	30428	552	30980	0.40	98
1982	85200	25987	531	26518	0.31	98
1983	82167	21616	695	22311	0.27	97
1984	79740	24831	47	24878	0.31	100
1985	82783	26527	*	26527	0.32	100
1986	79009	24182	*	24182	0.31	100
1987	47809	13013	*	13013	0.27	100
1988	73566	23960	*	23960	0.33	100
1989	53862	11525	*	11525	0.21	100
1990	64494	17409	*	17409	0.27	100
1991	52104	11132	*	11132	0.21	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
$\bar{X}$ 74-83	68766.9	20833.0	541.5	21374.5	0.31	97
$\bar{X}$ ±95%CL	±7534.9	±3429.0	±210.2	±3529.2	±0.04	±1.03
N	10	10	10	10	10	10
$\bar{X}$ 84-89	73792.0	22205.0	47.0	22214.4	0.30	100
$\bar{X}$ ±95%CL	±14436.0	±7517.6	.	±7524.0	±0.05	±0.12
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2c. Summary of Atlantic salmon recreational catch and effort data for the entire Newfoundland Region, 1953-1991.

NEWFOUNDLAND REGION (TOTAL)

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	27955	7519	707	8226	0.29	.
1954	17074	3421	709	4130	0.24	91
1955	11381	4829	402	5231	0.46	89
1956	33633	7680	609	8289	0.25	89
1957	17856	8949	739	9688	0.54	91
1958	16959	10027	896	10923	0.64	91
1959	18070	8795	750	9545	0.53	93
1960	17929	7290	673	7963	0.44	93
1961	14364	5189	428	5617	0.39	94
1962	22252	9965	769	10734	0.48	87
1963	27518	11494	609	12103	0.44	94
1964	36469	17351	967	18318	0.50	92
1965	35909	13439	784	14223	0.40	96
1966	36353	15339	746	16085	0.44	95
1967	39503	10476	373	10849	0.27	98
1968	41825	18375	681	19056	0.46	94
1969	41966	17793	409	18202	0.43	98
1970	41683	17932	421	18353	0.44	98
1971	41056	15940	457	16397	0.40	98
1972	36295	15180	486	15666	0.43	97
1973	51408	25347	741	26088	0.51	95
1974	70673	17279	683	17962	0.25	97
1975	62220	18962	418	19380	0.31	98
1976	68112	19630	840	20470	0.30	96
1977	72373	24307	1879	26186	0.36	91
1978	67434	21841	1200	23041	0.34	95
1979	53383	21066	869	21935	0.41	96
1980	69097	26235	1272	27507	0.40	94
1981	79729	33921	852	34773	0.44	97
1982	88321	28820	1072	29892	0.34	97
1983	85295	23988	993	24981	0.29	97
1984	82871	26779	372	27151	0.33	98
1985	85485	28536	194	28730	0.34	99
1986	82060	26575	283	26858	0.33	99
1987	51570	16492	418	16910	0.33	98
1988	78070	27891	459	28350	0.36	97
1989	58144	15036	408	15444	0.27	99
1990	68346	19652	259	19911	0.29	98
1991	54713	12283	28	12311	0.23	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	71663.7	23604.9	1007.8	24612.7	0.34	96
$\bar{X}$±95%CL	±7503.8	±3601.4	±281.6	±3698.0	±0.04	±1.23
N	10	10	10	10	10	10
84-89	77326.0	24963.4	343.2	25306.6	0.33	99
$\bar{X}$±95%CL	±13717.9	±6962.8	±130.7	±6915.0	±0.04	±0.77
N	5	5	5	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2d. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 1, 1964-1991.

SALMON FISHING AREA :01

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	.	.	.	.	.	.
1954	.	.	.	.	.	.
1955	.	.	.	.	.	.
1956	.	.	.	.	.	.
1957	.	.	.	.	.	.
1958	.	.	.	.	.	.
1959	.	.	.	.	.	.
1960	.	.	.	.	.	.
1961	.	.	.	.	.	.
1962	.	.	.	.	.	.
1963	.	.	.	.	.	.
1964	44	18	3	21	0.48	.
1965	278	57	75	132	0.47	19
1966	397	367	252	619	1.56	18
1967	468	119	106	225	0.48	78
1968	748	192	222	414	0.55	35
1969	.	.	.	.	.	100
1970	420	275	129	404	0.96	.
1971	523	171	82	253	0.48	77
1972	690	450	170	620	0.90	50
1973	700	533	128	661	0.94	78
1974	469	101	268	369	0.79	67
1975	245	379	117	496	2.02	46
1976	928	891	368	1259	1.36	51
1977	809	688	533	1221	1.51	63
1978	694	875	432	1307	1.88	61
1979	1101	595	323	918	0.83	73
1980	711	677	231	908	1.28	72
1981	414	660	195	855	2.07	78
1982	742	784	363	1147	1.55	65
1983	694	468	136	604	0.87	85
1984	832	681	212	893	1.07	69
1985	946	642	135	777	0.82	83
1986	568	369	125	494	0.87	84
1987	955	817	135	952	1.00	73
1988	1408	915	136	1051	0.75	86
1989	998	857	98	955	0.96	90
1990	678	272	70	342	0.50	92
1991	433	29	1	30	0.07	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	680.7	611.8	296.6	908.4	1.33	67.58
$\bar{X}\pm$95%CL	±179.2	±172.8	±94.8	±237.6	±0.31	±6.82
N	10	10	10	10	10	10
84-89	951.2	713.5	140.2	853.7	0.90	82.23
$\bar{X}\pm$95%CL	±286.2	±208.2	±39.9	±207.6	±0.14	±8.08
N	6	6	6	6	6	6

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2e. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 2, 1954-1991.

SALMON FISHING AREA :02

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	.	.	.	.	.	.
1954	100	350	150	500	5.00	.
1955	198	125	8	133	0.67	98
1956	101	20	0	20	0.20	100
1957	342	1022	49	1071	3.13	29
1958	366	849	20	869	2.37	98
1959	500	823	37	860	1.72	96
1960	399	558	39	597	1.50	95
1961	634	713	126	839	1.32	82
1962	611	764	58	822	1.35	92
1963	694	1372	58	1430	2.06	93
1964	1539	1898	118	2016	1.31	92
1965	1548	1487	161	1648	1.06	92
1966	1883	1611	110	1721	0.91	93
1967	968	966	89	1055	1.09	95
1968	1073	1939	87	2026	1.89	92
1969	1619	1612	120	1732	1.07	94
1970	2330	2172	112	2284	0.98	94
1971	2116	2836	157	2993	1.41	93
1972	2118	2074	174	2248	1.06	94
1973	4528	5528	449	5977	1.32	82
1974	2310	1660	244	1904	0.82	96
1975	1784	2524	56	2580	1.45	97
1976	2331	2337	152	2489	1.07	94
1977	2507	2244	160	2404	0.96	94
1978	3141	1243	152	1395	0.44	94
1979	2083	2622	167	2789	1.34	88
1980	1761	2185	321	2506	1.42	89
1981	1431	2833	105	2938	2.05	95
1982	2379	2049	178	2227	0.94	94
1983	2434	1904	162	2066	0.85	93
1984	2299	1267	113	1380	0.60	94
1985	1756	1367	59	1426	0.81	96
1986	2483	2024	158	2182	0.88	90
1987	2806	2662	283	2945	1.05	88
1988	3096	3016	323	3339	1.08	89
1989	3284	2654	310	2964	0.90	91
1990	3174	1971	189	2160	0.68	93
1991[1]	2176	1122	27	1149	0.53	99
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	2216.1	2160.1	169.7	2329.8	1.05	93.70
$\bar{X}$±95%CL	±342.6	±337.8	±51.4	±323.5	±0.30	±1.86
N	10	10	10	10	10	10
84-89	2620.7	2165.0	207.7	2372.7	0.91	90.76
$\bar{X}$±95%CL	±588.1	±767.4	±117.8	±881.6	±0.18	±2.71
N	6	6	6	6	6	6

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.
[1]DATA INCOMPLETE

Appendix 2f. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 3, 1953-1991.

SALMON FISHING AREA :03

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	77	58	8	66	0.86	.
1954	134	33	0	33	0.25	100
1955	36	11	0	11	0.31	100
1956	164	70	0	70	0.43	100
1957	68	47	0	47	0.69	100
1958	49	23	0	23	0.47	100
1959	82	14	0	14	0.17	100
1960	45	23	0	23	0.51	100
1961	160	58	1	59	0.37	96
1962	186	92	0	92	0.49	100
1963	353	190	0	190	0.54	100
1964	653	368	0	368	0.56	100
1965	889	677	4	681	0.77	99
1966	2298	1190	21	1211	0.53	97
1967	1725	459	2	461	0.27	100
1968	1801	1243	27	1270	0.71	94
1969	2118	945	45	990	0.47	97
1970	1207	784	1	785	0.65	100
1971	1175	742	11	753	0.64	99
1972	1195	498	0	498	0.42	100
1973	1667	1188	2	1190	0.71	100
1974	1890	839	4	843	0.45	100
1975	1948	1107	0	1107	0.57	100
1976	2284	947	1	948	0.42	100
1977	2249	1530	4	1534	0.68	100
1978	2030	758	1	759	0.37	100
1979	2514	2040	0	2040	0.81	100
1980	2585	1743	37	1780	0.69	98
1981	3113	2358	3	2361	0.76	100
1982	3907	2634	88	2722	0.70	96
1983	4075	1617	2	1619	0.40	100
1984	2248	1001	0	1001	0.45	100
1985	2355	1310	*	1310	0.56	100
1986	1430	772	*	772	0.54	100
1987	1121	563	*	563	0.50	100
1988	2979	1756	*	1756	0.59	100
1989	1672	738	*	738	0.44	100
1990	3159	1718	*	1718	0.54	100
1991	3495	1316	*	1316	0.38	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
$\bar{X}$ 74-83	2659.5	1557.3	14.0	1571.3	0.59	99.08
$\bar{X}\pm$95%CL	±564.1	±465.0	±20.2	±477.4	±0.12	±1.18
N	10	10	10	10	10	10
$\bar{X}$ 84-89	2136.8	1115.4	0.0	1115.4	0.52	100.00
$\bar{X}\pm$95%CL	±756.5	±527.4	.	±527.4	±0.09	±0.00
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2g. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 4, 1953-1991.

SALMON FISHING AREA :04

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	8630	2984	501	3485	0.40	.
1954	7344	1172	428	1600	0.22	87
1955	5125	2367	249	2616	0.51	82
1956	10672	3892	458	4350	0.41	84
1957	8789	4423	527	4950	0.56	88
1958	5888	4364	637	5001	0.85	87
1959	6321	3700	520	4220	0.67	89
1960	7051	3441	509	3950	0.56	88
1961	5277	2118	162	2280	0.43	96
1962	8842	4397	482	4879	0.55	81
1963	10910	3710	332	4042	0.37	93
1964	15608	7237	680	7917	0.51	85
1965	13749	4233	318	4551	0.33	96
1966	15249	6433	194	6627	0.43	96
1967	13915	4163	63	4226	0.30	99
1968	15318	5938	201	6139	0.40	95
1969	13807	4024	114	4138	0.30	98
1970	15759	4849	47	4896	0.31	99
1971	11379	3783	58	3841	0.34	99
1972	10778	3444	24	3468	0.32	99
1973	14544	6710	49	6759	0.46	99
1974	22038	5373	82	5455	0.25	99
1975	22384	5943	166	6109	0.27	97
1976	24787	6683	188	6871	0.28	97
1977	28117	8396	1086	9482	0.34	86
1978	24131	8774	502	9276	0.38	94
1979	21496	8026	327	8353	0.39	96
1980	25172	9414	507	9921	0.39	94
1981	32282	13536	361	13897	0.43	96
1982	32929	9973	258	10231	0.31	98
1983	26649	8954	297	9251	0.35	97
1984	29633	9900	15	9915	0.33	100
1985	34329	12190	*	12190	0.36	100
1986	31650	9293	*	9293	0.29	100
1987	18564	5453	*	5453	0.29	100
1988	27413	9854	*	9854	0.36	100
1989	17767	3786	*	3786	0.21	100
1990	23533	5661	*	5661	0.24	100
1991	21999	4892	*	4892	0.22	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
$\bar{X}$ 74-83	25998.5	8507.2	377.4	8884.6	0.34	95.64
$\bar{X}$ ±95%CL	±2891.9	±1660.6	±203.1	±1727.1	±0.04	±2.46
N	10	10	10	10	10	10
$\bar{X}$ 84-89	28158.4	9004.6	15.0	9007.6	0.32	99.97
$\bar{X}$ ±95%CL	±7877.0	±3876.4	.	±3877.8	±0.06	±0.09
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2h. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 5, 1953-1991.

SALMON FISHING AREA :05

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	6209	1099	37	1136	0.18	.
1954	3302	499	29	528	0.16	97
1955	1764	815	35	850	0.48	93
1956	12072	1077	62	1139	0.09	93
1957	2326	822	44	866	0.37	96
1958	2719	1384	40	1424	0.52	95
1959	3063	1125	43	1168	0.38	97
1960	2580	767	14	781	0.30	99
1961	2185	409	36	445	0.20	96
1962	2639	973	62	1035	0.39	87
1963	4519	1546	61	1607	0.36	94
1964	4877	2376	63	2439	0.50	96
1965	5231	1803	33	1836	0.35	99
1966	4281	1431	35	1466	0.34	98
1967	3754	1569	25	1594	0.42	98
1968	3732	2226	44	2270	0.61	97
1969	5769	2605	27	2632	0.46	99
1970	3189	2226	35	2261	0.71	99
1971	5963	1680	38	1718	0.29	98
1972	2015	1895	20	1915	0.95	99
1973	3894	2112	12	2124	0.55	99
1974	9335	1637	21	1658	0.18	99
1975	7527	1988	23	2011	0.27	99
1976	6975	1898	65	1963	0.28	97
1977	10572	4616	44	4660	0.44	98
1978	9108	2858	28	2886	0.32	99
1979	3926	1331	20	1351	0.34	99
1980	8155	2702	29	2731	0.33	98
1981	8863	3488	35	3523	0.40	99
1982	9935	2433	53	2486	0.25	99
1983	10195	2357	170	2527	0.25	93
1984	12403	2703	1	2704	0.22	100
1985	11613	3484	*	3484	0.30	100
1986	11510	4053	*	4053	0.35	100
1987	5267	1664	*	1664	0.32	100
1988	10497	4166	*	4166	0.40	100
1989	6617	1417	*	1417	0.21	100
1990	7999	2414	*	2414	0.30	100
1991	7002	2048	*	2048	0.29	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	8459.1	2530.8	48.8	2579.6	0.30	98.09
$\bar{X}\pm$95%CL	±1405.1	±690.0	±32.2	±691.5	±0.06	±1.35
N	10	10	10	10	10	10
84-89	10528.0	3164.6	1.0	3164.8	0.30	99.99
$\bar{X}\pm$95%CL	±2841.9	±1410.4	.	±1410.3	±0.10	±0.02
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2i. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 6, 1953-1991.

SALMON FISHING AREA :06

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	6513	118	0	118	0.02	0
1954	2515	44	0	44	0.02	100
1955	628	92	0	92	0.15	100
1956	4402	92	2	94	0.02	98
1957	805	87	0	87	0.11	100
1958	592	115	0	115	0.19	100
1959	535	55	0	55	0.10	100
1960	547	54	0	54	0.10	100
1961	512	19	0	19	0.04	100
1962	575	53	0	53	0.09	100
1963	837	93	1	94	0.11	98
1964	978	92	0	92	0.09	100
1965	871	85	3	88	0.10	97
1966	935	90	0	90	0.10	100
1967	1480	89	0	89	0.06	100
1968	1126	120	0	120	0.11	100
1969	917	106	0	106	0.12	100
1970	650	84	3	87	0.13	97
1971	710	55	1	56	0.08	99
1972	1345	119	0	119	0.09	100
1973	1683	250	0	250	0.15	100
1974	2685	303	1	304	0.11	100
1975	1851	94	1	95	0.05	100
1976	2864	247	2	249	0.09	98
1977	1869	401	19	420	0.22	93
1978	2237	296	7	303	0.14	98
1979	1766	244	2	246	0.14	99
1980	2807	320	14	334	0.12	95
1981	3406	605	29	634	0.19	92
1982	3031	288	17	305	0.10	97
1983	3684	296	10	306	0.08	97
1984	3218	312	5	317	0.10	98
1985	2256	429	*	429	0.19	100
1986	2596	445	*	445	0.17	100
1987	1306	137	*	137	0.10	100
1988	3392	429	*	429	0.13	100
1989	2959	246	*	246	0.08	100
1990	3089	334	*	334	0.11	100
1991	1620	186	*	186	0.11	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
$\bar{X}$ 74-83	2620.0	309.4	10.2	319.6	0.12	96.76
$\bar{X}$ ±95%CL	±479.8	±92.8	±6.8	±98.6	±0.03	±1.99
N	10	10	10	10	10	10
$\bar{X}$ 84-89	2884.2	372.2	5.0	373.2	0.13	99.69
$\bar{X}$ ±95%CL	±573.2	±109.8	.	±108.8	±0.05	±0.89
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2j. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 7, 1953-1991.

SALMON FISHING AREA :07

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	244	43	0	43	0.18	0
1954	41	5	0	5	0.12	100
1955	7	0	0	0	0.00	100
1956	307	27	1	28	0.09	0
1957	59	24	1	25	0.42	96
1958	72	19	0	19	0.26	100
1959	134	13	0	13	0.10	100
1960	128	25	1	26	0.20	93
1961	54	7	2	9	0.17	93
1962	.	.	.	.	.	100
1963	275	36	0	36	0.13	0
1964	660	59	0	59	0.09	100
1965	762	165	1	166	0.22	98
1966	647	97	0	97	0.15	100
1967	997	78	0	78	0.08	100
1968	829	31	1	32	0.04	99
1969	1216	33	0	33	0.03	100
1970	1103	20	1	21	0.02	97
1971	1295	40	0	40	0.03	100
1972	875	61	0	61	0.07	100
1973	1167	131	0	131	0.11	100
1974	2019	133	2	135	0.07	98
1975	1436	40	0	40	0.03	100
1976	1128	30	0	30	0.03	100
1977	1775	78	1	79	0.04	97
1978	1786	99	1	100	0.06	99
1979	1332	125	0	125	0.09	100
1980	1546	102	1	103	0.07	99
1981	1348	123	2	125	0.09	98
1982	1621	155	10	165	0.10	92
1983	1804	139	34	173	0.10	82
1984	1381	96	4	100	0.07	97
1985	1635	112	*	112	0.07	100
1986	700	102	*	102	0.15	100
1987	632	28	*	28	0.04	100
1988	1645	128	*	128	0.08	100
1989	1226	66	*	66	0.05	100
1990	827	49	*	49	0.06	100
1991	644	36	*	36	0.06	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	1579.5	102.4	5.1	107.5	0.07	95.22
$\bar{X}$±95%CL	±194.7	±29.9	±7.6	±34.1	±0.02	±6.18
N	10	10	10	10	10	10
84-89	1317.4	100.8	4.0	101.6	0.08	99.21
$\bar{X}$±95%CL	±481.6	±28.5	.	±28.3	±0.03	±2.00
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2k. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 8, 1953-1991.

SALMON FISHING AREA :08

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	50	6	0	6	0.12	0
1954	.	.	.	.	.	100
1955	.	.	.	.	.	.
1956	.	.	.	.	.	.
1957	.	.	.	.	.	.
1958	.	.	.	.	.	.
1959	.	.	.	.	.	.
1960	.	.	.	.	.	.
1961	.	.	.	.	.	.
1962	.	.	.	.	.	.
1963	.	.	.	.	.	.
1964	.	.	.	.	.	.
1965	17	44	6	50	2.94	.
1966	100	32	2	34	0.34	96
1967	.	.	.	.	.	100
1968	166	22	0	22	0.13	0
1969	16	12	0	12	0.75	100
1970	.	.	.	.	.	100
1971	290	25	9	34	0.12	.
1972	270	28	0	28	0.10	100
1973	410	94	4	98	0.24	88
1974	659	51	0	51	0.08	100
1975	527	87	0	87	0.17	100
1976	514	80	0	80	0.16	100
1977	530	81	0	81	0.15	100
1978	269	44	0	44	0.16	100
1979	331	100	0	100	0.30	100
1980	316	120	0	120	0.38	100
1981	384	77	0	77	0.20	100
1982	538	85	9	94	0.17	90
1983	414	41	5	46	0.11	94
1984	357	79	0	79	0.22	100
1985	611	103	*	103	0.17	100
1986	696	138	*	138	0.20	100
1987	268	43	*	43	0.16	100
1988	474	79	*	79	0.17	100
1989	330	99	*	99	0.30	100
1990	349	86	*	86	0.25	100
1991	324	11	*	11	0.03	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	448.2	76.6	1.4	78.0	0.17	98.32
$\bar{X}\pm$95%CL	±88.7	±17.9	±2.2	±17.7	±0.06	±2.65
N	10	10	10	10	10	10
84-89	493.6	99.6	0.0	99.6	0.20	100.00
$\bar{X}\pm$95%CL	±196.9	±30.0	.	±30.0	±0.05	±0.00
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 21. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 9, 1953-1991.

SALMON FISHING AREA :09

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	3012	1954	44	1998	0.66	.
1954	1712	617	32	649	0.38	98
1955	1701	673	36	709	0.42	94
1956	2411	1319	22	1341	0.56	97
1957	2602	1355	48	1403	0.54	96
1958	3094	1350	51	1401	0.45	96
1959	3557	1447	52	1499	0.42	96
1960	4223	937	46	983	0.23	97
1961	2681	705	17	722	0.27	98
1962	3685	1002	38	1040	0.28	95
1963	4311	1620	48	1668	0.39	95
1964	6044	1295	23	1318	0.22	99
1965	5214	1852	76	1928	0.37	94
1966	3416	822	13	835	0.24	99
1967	7421	900	17	917	0.12	98
1968	5264	1105	1	1106	0.21	100
1969	6976	1422	9	1431	0.21	99
1970	7701	1893	12	1905	0.25	99
1971	6704	1620	19	1639	0.24	99
1972	5633	1139	8	1147	0.20	100
1973	7660	2160	20	2180	0.28	98
1974	9162	1494	9	1503	0.16	100
1975	10046	1872	6	1878	0.19	100
1976	8809	1623	12	1635	0.19	99
1977	8766	1080	9	1089	0.12	99
1978	7224	1303	17	1320	0.18	98
1979	5859	1704	15	1719	0.29	99
1980	6446	2379	61	2440	0.38	97
1981	6343	1862	52	1914	0.30	98
1982	8574	1825	33	1858	0.22	98
1983	10754	2303	71	2374	0.22	96
1984	8754	2264	5	2269	0.26	100
1985	9385	1750	*	1750	0.19	100
1986	8807	2298	*	2298	0.26	100
1987	5994	867	*	867	0.14	100
1988	7157	1373	*	1373	0.19	100
1989	7039	1315	*	1315	0.19	100
1990	8240	1866	*	1866	0.23	100
1991	6482	560	*	560	0.09	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	8198.3	1744.5	28.5	1773.0	0.22	98.38
$\bar{X}\pm$95%CL	±1183.8	±288.8	±17.3	±302.8	±0.05	±0.91
N	10	10	10	10	10	10
84-89	8228.4	1800.0	5.0	1801.0	0.22	99.94
$\bar{X}\pm$95%CL	±1318.6	±583.5	.	±585.0	±0.05	±0.15
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 2m. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 10, 1953-1991.

SALMON FISHING AREA :10

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	2216	712	44	756	0.34	.
1954	1486	356	37	393	0.26	95
1955	1584	306	29	335	0.21	92
1956	2814	425	14	439	0.16	96
1957	2064	484	30	514	0.25	93
1958	3046	1043	65	1108	0.36	88
1959	2525	657	33	690	0.27	97
1960	2197	511	23	534	0.24	97
1961	1507	236	2	238	0.16	100
1962	3658	679	68	747	0.20	78
1963	3785	1058	38	1096	0.29	95
1964	3507	1408	18	1426	0.41	98
1965	4591	875	43	918	0.20	97
1966	4334	820	22	842	0.19	98
1967	4942	333	4	337	0.07	100
1968	6641	1387	6	1393	0.21	98
1969	3800	979	29	1008	0.27	98
1970	3899	601	7	608	0.16	99
1971	4796	928	17	945	0.20	97
1972	5841	567	4	571	0.10	100
1973	8714	1785	42	1827	0.21	93
1974	10987	1212	14	1226	0.11	99
1975	5999	427	9	436	0.07	99
1976	8811	730	10	740	0.08	98
1977	7213	1097	5	1102	0.15	99
1978	8764	1595	42	1637	0.19	96
1979	6405	849	8	857	0.13	100
1980	9588	1524	27	1551	0.16	97
1981	9309	1317	29	1346	0.14	98
1982	9331	1256	10	1266	0.14	99
1983	9173	1140	79	1219	0.13	94
1984	6361	1457	2	1459	0.23	100
1985	6887	1326	*	1326	0.19	100
1986	6387	1535	*	1535	0.24	100
1987	3348	429	*	429	0.13	100
1988	5198	1142	*	1142	0.22	100
1989	4709	898	*	898	0.19	100
1990	4778	835	*	835	0.17	100
1991[1]	2891	230	*	230	0.08	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
$\bar{X}$ 74-83	8558.0	1114.7	23.3	1138.0	0.13	98.06
$\bar{X}\pm$95%CL	±1108.2	±256.9	±16.4	±263.9	±0.02	±1.38
N	10	10	10	10	10	10
$\bar{X}$ 84-89	5908.4	1271.6	2.0	1272.0	0.22	99.96
$\bar{X}\pm$95%CL	±1133.7	±318.4	.	±318.9	±0.03	±0.10
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

[1]DATA INCOMPLETE

Appendix 2n. Summary of Atlantic salmon recreational catch and effort data for Salmon Fishing Area 11, 1953-1991.

SALMON FISHING AREA :11

YEAR	EFFORT ROD DAYS	GRILSE <63 CM	SALMON ≥63 CM	TOTAL CATCH	CPUE	PERCENT GRILSE
1953	1004	545	73	618	0.62	.
1954	440	345	33	378	0.86	94
1955	338	440	45	485	1.43	88
1956	690	758	50	808	1.17	90
1957	801	685	40	725	0.91	95
1958	1133	880	83	963	0.85	89
1959	1353	961	65	1026	0.76	93
1960	759	974	41	1015	1.34	96
1961	1354	924	82	1006	0.74	92
1962	2056	2005	61	2066	1.00	94
1963	1834	1869	71	1940	1.06	97
1964	2559	2600	62	2662	1.04	97
1965	2759	2161	64	2225	0.81	98
1966	2813	2446	97	2543	0.90	96
1967	3833	1800	67	1867	0.49	97
1968	5127	4172	92	4264	0.83	95
1969	5728	6055	65	6120	1.07	98
1970	5425	5028	74	5102	0.94	99
1971	6105	4060	65	4125	0.68	99
1972	5535	4905	86	4991	0.90	98
1973	6441	4856	35	4891	0.76	99
1974	9119	4476	38	4514	0.50	99
1975	8473	4501	40	4541	0.54	99
1976	8681	4164	42	4206	0.48	99
1977	7966	4096	18	4114	0.52	100
1978	8050	3996	18	4014	0.50	100
1979	6570	3430	7	3437	0.52	100
1980	10010	5069	44	5113	0.51	99
1981	12836	7062	41	7103	0.55	99
1982	15334	7338	53	7391	0.48	99
1983	15419	4769	27	4796	0.31	100
1984	15385	7019	15	7034	0.46	100
1985	13712	5823	*	5823	0.42	100
1986	15233	5546	*	5546	0.36	100
1987	11309	3829	*	3829	0.34	100
1988	14811	5033	*	5033	0.34	100
1989	11543	2960	*	2960	0.26	100
1990	12520	4446	*	4446	0.36	100
1991	7647	1853	*	1853	0.24	100
MEANS, 95% CONFIDENCE LIMITS, N'S:						
74-83	10245.8	4890.1	32.8	4922.9	0.48	99.33
$\bar{X}\pm$95%CL	±2259.7	±928.7	±10.4	±936.1	±0.07	±0.21
N	10	10	10	10	10	10
84-89	14136.8	5276.2	15.0	5279.2	0.37	99.94
$\bar{X}\pm$95%CL	±1975.2	±1845.1	.	±1850.6	±0.09	±0.16
N	5	5	1	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

PERCENT GRILSE IS CALCULATED BY SMOLT CLASS.
IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.